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THE

INFLUENCE

OF

TROPICAL CLIMATES,

MORE ESPECIALLY THE

Climate of India,

ON

EUROPEAN CONSTITUTIONS;

THE

PRINCIPAL EFFECTS AND DISEASES

THEREBY INDUCED,

THEIR PREVENTION OR REMOVAL,

AND

THE MEANS OF PRESERVING HEALTH

In Hot Climates,

Rendered obvious to Europeans of every Capacity.

AN ESSAY.

By JAMES JOHNSON, Esq.

SURGEON IN THE ROYAL NAVY.

Non ignarus mali miseris succurrere disco.

——————Study well the clime,
Mould to its manners your obsequious frame,
And mitigate those ills you cannot shun.

LONDON:

PRINTED FOR J. J. STOCKDALE, 41, PALL-MALL.

1813.

40662

Portsea: Printed by T. Gardner,
for J. Hammond, Gosport.

WELLCOME
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TO

DR. JOHN HARNESS, F. L. S.

ONE OF HIS MAJESTY'S COMMISSIONERS
OF TRANSPORTS, SICK AND
WOUNDED SEAMEN,

&c. &c. &c.

SIR,

I BELIEVE You will not suspect me of any interested motive in the present Address, since you well know, how rarely I have mingled with the importunate host —" who crowd Preferment's gate."

But, Sir, I can still remember, after a lapse of many years, the flattering manner in which you conferred on me my First Step of Promotion in His Majesty's Service, when I was very young, both in years

TO

DR. JAMES CURRY,

PHYSICIAN TO GUY'S HOSPITAL,

&c. &c. &c.

SIR,

When prostrate on the bed of sickness, labouring under the dire effects of a Tropical Climate, my mental and corporeal powers reduced to the lowest ebb, and utterly incapable of prescribing for myself,—You kindly visited me—you assiduously watched the progress of my disorder, and, under Heaven, restored me to comparative health.

To whom, Sir, can I owe a greater debt of gratitude, than to the Man who so materially contributed to the prolongation of my existence?

If I have avoided soliciting your permission for this Address, it is because, as you generously refused all private remuneration for your good offices, so I was afraid you would decline all public thanks, and thus deprive me of the only means I possess of testifying, with what grateful sentiments of respect

I am,

SIR,

Your most faithful

humble Servant,

J. JOHNSON.

Portsmouth Harbour,
May, 1813.

PREFACE.

THE following Essay, certainly, is not the mere offspring of a fertile imagination, or a good library. It has not been committed to the press, till after fifteen years of observation and experience, in a vast variety of climates, and with some *unusual sources of information* on the subject which it more particularly embraces. To this it may be added, that the Author has felt, in his own person, that INFLUENCE, and most of those EFFECTS of Tropical Regions, which he has here undertaken to investigate.—

> "Alternate change of climate had he known,
> And felt the fierce extremes of either zone;
> Where polar skies congeal th' eternal snow,
> Or equinoctial suns for ever glow—
> Where seas of glass, with gay reflexion, smile
> Round the green coast of JAVA's palmy isle,
> To where the Isthmus, lav'd by adverse tides,
> Atlantic and Pacific seas divides."

Under these circumstances, he comes before the Public with respect, but confidence; neither wantonly provoking, nor meanly shunning, the eagle eye of criticism.

It will probably be suggested, indeed, that to tread in the steps of Lind, Clark, Moseley, &c. must be a dangerous, if not a presumptuous course. The Author does not conceive that he can be fairly exposed to any peril or censure in

these respects, unless he either *rashly* opposes or *servilely* copies his illustrious predecessors.

He believes his greatest enemies will not accuse him of the *latter*, and to the *former* he will not plead guilty, for the following reasons:—First, because his knowledge is derived from sources equally as good and authentic as theirs —OBSERVATION AND PERSONAL SUFFERING. Secondly, as he took the pains to observe, so has he claimed the right to think, for himself; determined never to succumb to any doctrines or opinions, whatever might be their authorities, when they clashed with the evidence of his own senses.

This independence will, no doubt, be branded with the opprobrious title of arrogance, especially as he has sometimes, while exposing the errors, indulged himself in a smile at the follies or inconsistencies of certain eminent characters, whose dogmas he found to be far from infallible, however currently they pass among those who have neither the opportunity nor inclination to put them to the experimentum crucis.

On this head, therefore, he is prepared to receive his full share of obloquy; perfectly indifferent whether it come in a roaring torrent, or in the most insignificant stream. It may sweep away the airy fabrics of imagination or theory—it will idly rave against the rocky edifice of facts. On the *latter*, he has patiently expended his time, and exercised his talents—on it rest all his hopes. In the overthrow of the *former*, [which, however, are generally under protection of the latter] he may regret the fall of a fanciful pavilion, rather than the loss of a useful mansion.

In attempting to extend the utility of his Essay beyond the contracted sphere of medical perusal, [without derogating, however, from the dignity of a philosophical discussion] he can cite the precedent of almost every writer on Tropical Climates. Indeed, the *necessity* of such a plan will be rendered evident by the following passage from Dr. Balfour, whose situation, at the Head of the Medical Department in Bengal, gave him ample opportunities of forming a correct judgment on the point in question.

Speaking of the army officers in the East Indies, he remarks, that "being constantly employed, during the first years of their service, "in the most unhealthy corners of the country, "remote from medical assistance, their *success, reputation, health, and lives*, and the lives of all "around them, depend often on the MEDICAL "SKILL which they may have acquired."*

Now, it is very singular, that notwithstanding the extensive medical establishments of the India Company in the East, and the known ability which very generally characterizes their officers there, we have scarcely any detailed account of the climate and diseases of that vast empire, while volumes after volumes have issued from the press, on the climate and diseases of the West-India islands!

Where, for instance, are we to look for any *modern* account of the Endemic of Batavia? a settlement over which the British flag now waves, and whose very *name* is associated, in the European mind, with sickness and death!

---

* Preface to Treatise on Sol-lunar Influence, p. xiii.

—As for Hepatitis, it is scarcely noticed by tropical writers, though it has been termed the "Endemic of India," and we are forced to learn its nature and cure from a London physician, who never set foot between the tropics.

The last volume on India Diseases, [Mr. Curtis's] was written thirty years ago; and that many discoveries and improvements have since taken place, the Author of the present Essay trusts will soon be manifest.

Although the general scope of his observations bears on all tropical climates, yet he has directed his attention more particularly to the Eastern world, both because he was better acquainted with it, and less was written on its medical topography. But the western hemisphere has not been neglected. The grand endemic scourge [Yellow Fever] is carefully considered, and Dysentery is common to both countries.

He flatters himself that the Prophylactic part of this Essay, which applies to all intertropical situations, will be found to contain a better Hygeian code than is detailed in any preceding Work on the same subject.

It is not the Author's intention, however, to have recourse to canting apologies for his intrusion on the Public; if he has neither corrected former errors, nor added any new and useful information to the original stock of knowledge, his Essay will soon meet the fate it deserves;—if otherwise, it will probably have its reward.—At all events, he will neither deprecate the one, nor cringe for the other.

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THE

Influence of Tropical Climates

ON

European Constitutions.

MIGRATION.

I BELIEVE it is a settled opinion among Philosophers, that the Constitution of Man is better adapted to bear those changes of temperature, &c. experienced in migrating from a Northern to a Tropical region, and vice versa, than that of any other animal. They proudly observe, that this power of accommodating itself to all climates, is a distinctive characteristic of the human species, since no other animal can endure transplantation with equal impunity.

I think it would not be difficult to shew, that for this boasted prerogative, Man is, perhaps, more indebted to the ingenuity of his mind, than to the pliability of his body. Nor can this argument be considered favourable to materialism; on the contrary, by ascribing the superiority to *mind*, not *matter*, it will be found to militate against that gloomy doctrine.

To me, indeed, it appears, that man and other animals start on very unequal terms, in their emigrations. Man, by the exertion of his mental faculties, can raise up a thousand barriers round him, to obviate the deleterious effects of

climate on his constitution; while the poor animal, tied down by instinct to a few simple modes of life, is quite defenceless. Nature must do all for the latter; and, in fact, it is evident that this indulgent mother does compensate, in some degree, for the want of reason, by producing such corporeal changes, as are necessary for the animal's subsistence under a foreign sky, in a *shorter* space of time, than is necessary for effecting correspondent changes in man. One example may suffice. The tender and innocent sheep, when transported from the inclemency of the north, to pant under a vertical sun on the equator, will, in a few generations, exchange its warm fleece of *wool* for a much more convenient coat, of *hair*. "Can the Ethiopian change his hue," in the same period, by shifting his habitation from the interior of Africa to the shores of the Baltic? Or will it be said, that the fair complexion of Europeans, may, in two or three generations, acquire the sable tinct of the intertropical natives, by exchanging situations? Assuredly not. Where then is the superior pliancy of the human constitution? The truth is, that the tender frame of man is incapable of sustaining that degree of exposure to the whole range of causes and effects incident to, or arising from vicissitude of climate, which so speedily operates a change in the structure, or, at least, the exterior, of unprotected animals.

But it is observed, that of those animals translated from a temperate to a torrid zone, "many die suddenly, others droop, and all degenerate." This is not to be wondered at, considering the disadvantages under which they labour. Man

would not fare better, if placed in similar circumstances. Even as it is, the parallel is not far from applying. Of those Europeans who arrive on the banks of the Ganges, many fall early victims to the climate, as will be shewn hereafter. That others droop, and are forced, in a very few years, to seek their native air, is also well known. And, that the successors of all would *gradually degenerate,* if they remained permanently in the country, cannot easily be disproved; while a very striking instance, corroborative of the supposition, may be here adduced.

Whoever has attentively examined the posterity of De Gama, and Albuquerque, now scatterred over the coast of Malabar, the plains of Bengal, and the Island of Macao, once the theatres of Lusitanian pre-eminence, will be tempted to exclaim:—

'Twas not the sires of such as these,
Who dared the elements and pathless seas;
Who made proud Asian monarchs feel
How weak their gold was against Europe's steel.
But beings of *another mould,*—
Rough, hardy, vigorous, manly, bold!

In answer to this, it will be alleged, "that they have married and blended with the natives until all shade of distinction is obliterated." But it is well known to those who have resided long in India, that the two great prevailing classes of society in that country, the Hindoos and Mahomedans, hold these descendants of the Portuguese in the most marked and sovereign contempt; while the latter, still retaining a remnant of the

religion, and all the prejudice of their progenitors, entertain an equal abhorrence of their idolatrous and infidel neighbours. This being the case, we may fairly presume, that the intermixture has been much less extensive than is generally supposed; an inference strongly supported, if not confirmed, by the well-known fact, that, while the people in question have forfeited all pretensions to the European *complexion,* their more stubborn *features* still evince a descent, and establish their claim to an ancestry, of which they are superlatively proud. Let those who deny *one common origin* of mankind, and that climate is the *sole* cause of complexion, explain this phenomenon if they can.

On the other hand, if we look at inter-tropical natives approaching our own latitudes, the picture is not more cheering. The African children brought over by the Sierra Leone Company for education, seldom survived the third year in this country. "They bear the first win-
"ter, (says Dr. Pearson) tolerably well, but
"droop during the second, and the third gene-
"rally proves fatal to them."

The object of these remarks, which, at first sight might seem irrelevant, will now appear.—Since it is evident that nature does not operate more powerfully in counteracting the ill effects of climate on man, than on other animals, it follows that we should not implicitly confide, as too many do, in the spontaneous efforts of the constitution, but on the contrary, call in to its aid, those artificial means of prevention and melioration, which reason may dictate and ex-

perience confirm. In short, that we should, as my motto expresses it:—

"Study well the clime
"Mould to its manners our obsequious frames,
"And mitigate those ills we cannot shun."

That these salutary precautions are too often despised or neglected, a single quotation from a Gentleman, who has resided more than twenty years in India, and whose talent for observation is, in my opinion, unequalled, will put beyond a doubt. "Nothing can be more preposterous "(says Capt. Williamson*), than the significant "sneers of Gentlemen on their first arrival in "India; meaning thereby to ridicule, or to "despise what they consider effeminacy or "luxury. Thus several may be seen walking "about without chattahs (i. e. umbrellas) dur-"ing the greatest heats. They affect to be "ashamed of requiring aid, and endeavour to "uphold, by such a display of indifference, the "great reliance placed on *strength of consti-"tution.* This unhappy infatuation rarely ex-"ceeds a few days: at the end of that time, "we are too often called upon to attend the "funeral of the self-deluded victim.†"

It shall be my endeavour in this essay, after tracing the causes, and portraying the effects of tropical diseases, in such a manner as must impress the most heedless European with the necessity of circumspection on approaching the scene of danger, to furnish a code of instruc-

* Author of "Oriental Field Sports," "East India Vade Mecum," &c.

† East India Vade Mecum, vol. 2. page ii.

tions deduced from principle and experience, that cannot fail to prove a useful companion to every one who regards health as the grand source of happiness, and the most invaluable blessing which heaven can bestow. Many a day's anxiety and personal suffering should I have escaped, had I been furnished with so friendly a monitor!

Without any very fastidious regard to arrangement, it will still be necessary, for the sake of perspicuity, to observe some order. I shall therefore divide the subject into three principal heads, viz:—

1.—The Primary or General Effects of a Tropical Climate on the European Constitution.

2.—The Specific or Actual Diseases.

3.—Phrophylaxis; or the Means of Counteracting the Influence of Climate, and Preserving Health.

PART I.

PRIMARY OR GENERAL EFFECTS.

UNDER this head, I shall consider some of those gradual and progressive changes in the constitution, and deviations from previous health and habits, which, though pre-disposing, and verging, as it were, towards, yet fall short of actual disease.

These are consequences which all must expect, more or less, to feel, on leaving their native soil, and, of course, in which all are directly interested. For, although a few individuals may occasionally return from even a long residence in hot climates, without having suffered any violent illness, or much deterioration of constitution; yet the great mass of Europeans will certainly experience the effects developed under this head, and many others of minor consequence, which will be taken notice of in different parts of the work.

It is, however, by the most scrupulous attention to these *incipient deviations from health,* by early arresting their growth, or at least retarding, as much as possible, their progress, that we can at all expect to evade those dangerous diseases, to which they inevitably, though often imperceptibly, tend.

Sec. 1.—The transition from a climate, whose medium heat is 52°. of Fahrenheit, to one where the thermometer ranges from 80°. to 100°. and sometimes higher, might be supposed, a priori,

to occasion the most serious consequences. Indeed, the celebrated Boerhaave, from some experiments on animals, concluded, that the *blood would coagulate in our veins,* at a temperature very little exceeding 100°. More modern trials, however, have proved that the human frame can bear, for a short time at least, more than double the above degree of atmosperical heat, and that too without greatly increasing the natural temperature of the body.

The benevolent author of our existence has endowed man, as well as other animals, with the power, not only of generating heat, and preserving their temperature, in the coldest regions of the earth; but has also provided an apparatus for carrying off any super-abundance of it that might accumulate where the temperature of the atmosphere approaches to, or exceeds that of the body. With the *former* process, which is supposed to be carried on in the lungs, we have, at present, nothing to do; the *latter* is one which deserves great attention, and which will meet with ample consideration in various parts of this essay.

We are no sooner beneath a vertical sun, than we begin, as may naturally be supposed, to experience the disagreeable sensation of unaccustomed warmth; and as the temperature of the atmosphere, even in the shade, now advances within ten or twelve degrees to that of the blood, and in the sun, very generally exceeds it, the heat, perpetually generated in the body, cannot be so rapidly abstracted, as hitherto, by the surrounding air, and would, of course, soon accumulate so as to destroy the

Perspiration.

functions of life itself, did not Nature immediately open the sluices of the skin, and by a flow of *perspiration*, reduce the temperature of the body to its original standard.

Whether the super-abundant animal heat combines with the perspirable fluid, and thus escapes; or whether the refrigeration takes place on the principle of evaporation, it is more a matter of curiosity than practical importance to ascertain. We know the fact, that perspiration is a cooling process. The modus operandi—

"Let sages versed in Nature's lore explain*."

When we contemplate this admirable provision of nature, against what might appear to us an unforeseen event;—when we survey the resources and expedients which she can command on all emergencies—her power of supplying every waste, and restraining every aberration of the constitution, we would be almost tempted to conclude, that man was calculated for immortality! But, alas!

——————"There is a point,
"By Nature fixed, whence life must downward tend."

* Dr. Mosely solves the difficulty without hesitation, and in a *truly philosophic manner*.—"Living (says he) in an hot "steam, as it were, their bodies are filled with it; and the "turgidness and firmness of the capillary vessels of newly-"arrived Europeans, require some time to render them suf-"ficiently *pervious* to let out the *inflamed* and rarified parts "of their rich blood by the pores, fast enough to cool it, and "bring it down to a state suitable to the climate."—Page 68. —How did the steam get in?—One would suppose, that it would make its exit with more facility than its entrance.

Perspiration.

Till at length, this wonderful machine, exhausted by its own efforts at preservation, and deserted by its immaterial tenant, sinks, and is resolved into its constituent elements !

Nascentes morimur, finisque ab origine pendet.

But, to return, we must not conclude that this refrigerating process, adopted by nature to prevent more serious mischief, is, in itself, unproductive of any detriment to the constitution—far otherwise. " If (says Dr. Currie) the orifices do *not* " pour out a proportionate quantity of perspira- " tion, disease must ensue from the direct stimulus " of heat; and if the *necessary* quantity of per- " spiration takes place, the system is *enfeebled* by " the evacuation*."

Here, then, we have Scylla on one side, and Charybdis on the other:—morbid accumulation of heat if we do not perspire enough—debility if we do. How are we to direct our course through this intricate and dangerous navigation ?

Dr. Currie.

" Europeans who go to the West Indies are " more healthy, in proportion, as they perspire " freely, especially if they support the discharge " by a moderate use of *gently stimulating liquids,* " *stopping short of intoxication.*"—ib.

Dr. Mosely.

" I aver from my own knowledge and custom, " as well as from the custom and observations of " others, that those who drink *nothing but water,* " are but little affected by the climate, and can

* Medical Reports, vol. 1, p. 278.

Perspiration.

" undergo the greatest fatigue without incon-
" venience."—*Tropical Diseases, p.* 57.

Who shall decide when Doctors disagree ?

Without meaning to set up the judgment of a Moseley in competition with that of a Currie, on other subjects, candour obliges me to confirm, by personal observation and experience, the truth of Dr. Moseley's remark. Dr. Currie never was in a tropical climate, therefore had the above piece of information from others; and it is one of the very few erroneous positions in his invaluable work. Nevertheless, these apparently opposite directions, are not so contradictory in *fact* as in *terms*. The principle on which both act is the same, though the means are different. Dr. Currie's plan of supplying the stomach with "gently stimulating liquids," will undoubtedly keep the morbid heat from accumulating, by driving out a copious perspiration; but it will, at the same time, lead to debility, by carrying off much more of that fluid than is necessary, by which means the thirst, instead of being allayed, will be increased; and what is still worse, the body will be rendered more susceptible to the subsequent impressions of cold, the deleterious effects of which, at these times, are much more extensive than is generally believed, as will be shewn in another part of the work.

Dr. Moseley's plan, on the other hand, far from preventing perspiration, will be found, in general, to promote it, but at the same time restrain its *excess*.—A familiar example or two will elucidate this subject.

Perspiration.

We will suppose two Gentlemen to be sitting in a room, at Madras, or in Jamaica, just before the sea-breeze sets in, both complaining of thirst, their skin hot, and the temperature of their bodies 100°, or two degrees above the natural standard.

One of them, pursuant to Dr. Currie's instructions, applies to the sangaree bowl, or porter cup, and after a draught or two, brings out a copious perspiration, which soon reduces the temperature to 98°. It will not stop here, however, nor indeed will the Gentleman, according to the plan proposed; for instead of putting the bulb of the thermometer under his tongue, to see if the mercury is low enough, he, feeling his thirst increased by the perspiration, very naturally prefers a glass or two more of the sangaree—"to support the discharge"—still, however, "stopping short of intoxication." Now, by these means, the temperature is reduced to 97° or 96½°, in which state, even the slight, and otherwise refreshing chill of the sea-breeze, checks more or less the cuticular discharge, and paves the way for future maladies.

Whether this is, or is not, a true representation of the case, let Dr. Currie's own words decide.

"If (says he) ut supra, the necessary quantity "of perspiration takes place, viz. by the use of "gently stimulating liquids, the system is en- "feebled by the evacuation, and the extreme "vessels losing tone *continue* to transmit the per- "spirable matter, *after* the heat is reduced to its "natural standard, or, perhaps, *lower;* in which "situation, we can easily suppose that even a "*slight degree* of external cold may become dan- "gerous."—Vol. 1. p. 278.

Perspiration.

Let us now turn to the other Gentleman, who pursues a different line of conduct. Instead of the more palatable potation of sangaree, he takes a draught of plain cold water. This is hardly swallowed before the temperature of his body loses by abstraction alone, one degree, at least, of its heat. It is now, we will suppose, at 99°. But the external surface of the body immediately sympathising with the internal surface of the stomach, relaxes, and a *mild* perspiration breaks out, which reduces the temperature to its natural standard, 98°. Farther, this simultaneous relaxation of the two surfaces, completely removes the disagreeable sensation of thirst; and, as the simple "antedeluvian beverage," does not possess many Circean charms for modern palates, there will not be the slightest danger of its being abused in quantity, or the perspiratory process carried beyond its salutary limits. Nor need we, on the other hand, apprehend its being neglected; since, from the moment that the skin begins to be constricted, or morbid heat to accumulate, the sympathising stomach and fauces will not fail to warn us of our danger, by craving the proper remedy. Taken therefore as a general rule, the advantages of the *latter* plan are numerous—the objections few. It possesses all the requisites of the *former*, in procuring a reduction of temperature, (the only legitimate object which the admirers of sangaree and copious perspiration can have in view) without any danger of bringing it below the proper level, or wasting the strength, by the profuseness of the discharge.

It is true, there is no general rule without exception; and there may be instances, wherein

the use of "gently stimulating liquids" is preferable to that of cold drink.

For example:—during, or subsequent to violent exertion, under a powerful sun; or in any other situation in a tropical climate, when profuse perspiration is rapidly carrying off the animal heat, and especially when fatigue or exhaustion has taken place, or is impending—then cold drink would be dangerous, on the same principle as external cold. But these cases rarely happen through *necessity*, to Europeans, particularly in the East; and they will be duly considered in the prophylactic part of this essay.

I have been more prolix on this point, than may have seemed necessary to the medical reader; but considering that this is generally the first erroneous step which Europeans take, on entering the tropics, and that the function in question (perspiration) is more intimately connected with another very important one in the human frame, than is commonly supposed; I thought it proper to set them right in limine. The probablity of *future suffering* will rarely deter the European from indulging in *present gratifications;* but where these last, *i. e.* the stimulating liquids, are represented, from high authority, as not only innocent but salutary, it will require some strength of argument to persuade young men to relinquish their use, or to check the wide-spreading evil.

Sec. 2.—In attempting to delineate the influence of hot climates on the European constitution, although we may endeavour—

"To chain the events in regular array;"

Sympathy.

yet, it must be confessed, that nature spurns all such artificial arrangements; since simultaneous impressions on several organs, must produce co-temporary and combined effects, which our limited faculties are scarcely capable of embracing in thought, much less, of describing in the fetters of language.

Taking facts, however, and personal observation for land-marks, I shall pursue the investigation, as nearly as possible, in the order of nature and of events.

There exists between different, and often distant parts of the body, a certain connexion or relation, which, in medical language, is called "consent of parts:"—that is, when *one* is affected by particular impressions, the *other* sympathises, as it were, and takes on a kind of analogous action.

This sympathy, or consent of parts, has never been *satisfactorily* accounted for, by the ablest of our physiologists, nor—(mirabile dictu!) by the most ingenious of our theorists. As all, however, are agreed in respect to the *fact*, we may allow the *cause* to remain locked up in Nature's strong box, in company with many other arcana, which she does not seem disposed to reveal.

Of these sympathies, none is more universally remarked, or familiarly known, than that which subsists between the *external* surface of the body, and the *internal* surface of the alimentary canal. This, indeed, seems less incomprehensible than many others, since the *latter* appears to be a continuation of the *former*, with the exception of the cuticle. In the first section, I gave an instance of the skin sympathising with the stomach,

where the cold drink was applied to the latter organ. Had the water been applied to the external surface of the body, on the other hand, the stomach would have sympathised, and the thirst been assuaged.

The loss of tone, then, in the extreme vessels of the surface, in consequence of excessive, or long continued perspiration is, on this principle, necessarily accompanied, or soon succeeded by a consentaneous loss of tone in the stomach, and fully accounts for that anorexia, or diminution of appetite, which we seldom fail to experience on entering the tropics, or, indeed, during hot weather in England. Now this, although but a link in the chain of effects, seems to me a most wise precaution of nature, to lower and adapt the irritable, plethoric, European constitution, to a burning climate, by guarding very effectually against the dangerous consequences of repletion. This view of the subject will set in a clear light, the pernicious effects of stimulating liquids, operating on an organ already debilitated (probably for salutary purposes), and goading it thereby to exertions beyond its natural power, producing a temporary plethora, with a great increase of subsequent atony.

A remark, which every person of observation must have made, even in this country, during the summer, but particularly in equatorial regions, will farther elucidate this subject. If by walking, for instance, or any other bodily exercise, in the heat of the sun, during the forenoon, especially near dinner hour, the perspiration be much increased, and the extreme vessels relaxed, we find,

on sitting down to table, our appetites entirely gone, until we take a glass of wine, or other stimulating fluid, to excite the energy of the stomach. Under such circumstances of artificial or forced relish for food, it is not to be wondered at, that the digestion should be incomplete, and that the intestines should suffer from the passage of badly concocted aliment. Observation and personal feeling have taught me this,—that in hot climates, perhaps during hot weather in all climates, an hour's cool repose before dinner is highly salutary, and if on commencing our repast, we find we cannot eat without *drinking*, we may be assured that it is nature's caveat,—to beware of eating at all. This will be deemed hard doctrine by some, and visionary by others; but I know it is neither one nor the other: and those who shall neglect or despise it, may feel the bad consequences, when it is too late to repair the error.

There are several other causes, however, which operate in conjunction with the above, to impair the appetite:—one of which is, the want of rest at night. After disturbed and unrefreshing sleep, (but too common in tropical climates) the whole frame languishes next day, and the stomach participates in the general relaxation. The means of managing and obviating these effects, will be pointed out in the prophylactic part of this essay.

Sec. 3.—We now take a wider range, and come to a subject intricate in its nature, extensive in its bearings, and important in its consequences. It will readily be understood, that I allude to the influence of a tropical climate on the liver and its functions.

Biliary Secretion.

This immense gland is the largest organ in the human frame; for neither the brain, heart, spleen, nor kidnies, can be at all compared with it; and the lungs, though occupying a larger extent when inflated, yet if condensed to equal solidity, would fall short in size and weight.

Now, since nature, throughout her works, has seldom been accused of supererogation, we may safely conclude that the importance of this organ's function, in the animal economy, is commensurate with its magnitude. The structure of the liver has been explored by the anatomist, and the bile secreted in it, analysed. But, although the chymist has separated this fluid into its constituent parts; yet physiologists are not exactly agreed in regard to the purposes which it answers in the system. It is proved to be antiputrescent, and in conjunction with the pancreatic juice, it probably assists in animalising and eliminating the chyle from the chyme.

It is supposed not to enter the circulation naturally, at least in an unchanged state along with the chyle; but, there can be little doubt of its preventing the putrefactive or fermentative process from taking place in the excrementitious part, which is, ultimately, to be expelled the body. Another and a principal use of this important fluid appears to consist in stimulating the intestines into their peculiar peristaltic motion, and thus propelling their contents continually forward, to give the lacteals an opportunity of drinking up and conveying to the blood the nourishment by which our frames are supported.

In this point of view, it is the natural tonic of the intestines, and also the purgative which frees

Biliary Secretion.

them from all fecal matter, the retention of which is productive of so much inconvenience, not to say disease.

The first effect of a tropical climate on the function of the liver, is universally allowed to be an *increase* of the biliary secretion. This is so evident in our own country, where the summer and autumn are distinguished by diseases arising from super-abundant secretion of bile, that it would be waste of time to adduce any arguments in proof of the assertion. But why an increase of the atmospherical temperature should so invariably augment the hepatic secretion, in all climates, and all classes of people, is totally unaccounted for. When Dr. Saunders conjectures that richness of blood, tenseness of fibre, grossness of diet, and rapidity of circulation, are the causes of Europeans being at first more afflicted with bilious redundancy in India than the native Hindoos, he gives us only a *comparative* view of things, and leaves us completely in the dark with respect to the *modus operandi* of heat, as a general and universal spur on the secretory vessels of the liver.

Were this a question of mere curiosity, or theoretical speculation, I should pass it by unnoticed; but from long and attentive observation, as well as mature reflection, I believe that I have discovered a connection between two important functions in the animal economy, which will let in some light on this subject, and lead to practical inferences of considerable importance.

The arguments and facts adduced in support of this connexion will be found under the heads Hepa-

titis, Dysentery, and in other parts of this essay. In the mean while, I shall merely state in a few words the *result* of my observations, leaving the reader to give credit to it, or not, as he may feel inclined.

There exists then between the extreme vessels of the vena portarum in the liver, and the extreme vessels on the surface of the body—in other words, between *biliary secretion and perspiration,* one of the strongest sympathies in the human frame; although entirely unnoticed hitherto, as far as I am acquainted. That these two functions are regularly, and to appearance, equally increased, or at least influenced by *one* particular agent (atmospherical heat) from the cradle to the grave,—from the pole to the equator, will be readily granted by every observer: and that this *synchronous action* alone, independent of any other original connection, should soon grow up into a powerful sympathy, manifesting itself when *either* of these functions, came under the influence of *other agents,* is a legitimate conclusion in theory, and what I hope to prove by a fair appeal to facts. This last consideration is the great practical one; for it is of little consequence whether this sympathy was originally implanted by the hand of nature at our first formation, or sprung up gradually in the manner alluded to, provided we know that it actually exists, and that by directing our operations towards any *one* of the functions in question, we can decisively influence the *other.* This is what I maintain; but here I only offer assertions; in a future part of the work I shall bring forward facts and cogent arguments in proof of them. At present let this "consent of parts" between the skin and the liver, which I shall beg

leave to denominate the "*Cutaneo-hepatic Sympathy,*" account for the augmented secretion of bile, which we observe on arriving in hot climates, corresponding to the increased cuticular discharge. I shall here offer one practical remark, resulting from this view of the subject, and which will be found deserving of every European's attention on his emigration to southern regions. Namely, that as the state of the perspiratory process is a visible and certain index to that of the biliary, so every precautionary measure, which keeps in check, or moderates the profusion of the *former* discharge, will invariably have the same effect on the *latter*, and thus tend to obviate the inconvenience, not to say the disorders, arising from redundancy of the hepatic secretion. To this rule I do not know a single exception; consequently its universal application can never lead astray in any instance. But this subject will be better elucidated, and more clearly explained hereafter.

To proceed. It is well known, without having recourse to Brunonian doctrines, that if any organ be stimulated to *inordinate* action, one of two things must in general ensue. If the cause applied, be constant, and sufficient to keep up, for any length of time, this *inordinate* action, serious injury is likely to accrue to the organ itself, even so far as *structural* alteration. But if the cause be only temporary, or the force not in any great degree, then an occasional torpor, or exhaustion, as it were, of the organ takes place, during which period its *function* falls short of the natural range. To give a familiar example, of which too many

of us are quite competent to judge :—thus, if the stomach be goaded to immoderate exertion to-day, by a provocative variety of savoury dishes, and stimulating liquors, we all know the atony which will succeed to-morrow, and how incapable it then will be of performing its accustomed office. It is the same with respect to the liver. After great excitement, by excessive heat, violent exercise in the sun, &c. &c. a torpor succeeds, which will be more or less, according to the degree of previous excitement, and the length of time which the stimulating causes have been habitually applied. For instance, when Europeans first arrive between the tropics, the degree of torpor bears so small a proportion to that of preceding excitement, in the liver, that it is scarcely noticed ; parcularly as the debilitated vessels in this organ, *continue* (similar to the perspiratory vessels on the surface) to secrete a depraved fluid for some time *after* the exciting cause has ceased ; hence the *increase* of the biliary secretion occupies our principal attention. But these torpid periods, however short, at first, gradually and progressively increase, till at length they far exceed the periods of excitement ; and then a *deficiency* of the biliary secretion becomes evident. This is not only consonant to experience, but to analogy. Thus when a man first betakes himself to inebriety, the excitement occasioned by spirits, or wine, on the stomach and nervous system, far exceeds the subsequent atony, and we are astonished to see him go on for some time without, apparently, suffering much detriment in his constitution. But the period of excitement is gradually curtailed, while

that of atony increases, which soon forces him not only to augment the dose, but to repeat it oftener and oftener, till the organ and life are destroyed!

Now it is somewhat singular, that this alternation of redundancy and deficiency, or in other words, *irregular* secretion in the biliary organ, should pass unnoticed by writers on hot climates. They, one and all, represent the liver as a colossal apparatus, of the most Herculean power, that goes on for years, performing prodigies in the secreting way, without ever being exhausted for a moment, or falling *below* the range of ordinary action, till structural derangement, such as schirrosity, incapacitates it for its duty!

A very attentive observation of what passed in my own frame, and those of others, has led me to form a very different conclusion, and the foregoing statement will, I think, be found a true and natural representation of the case. I shall afterwards shew, that the secretion in question is frequently below *par*, in quantity, at the very time when it is considered to be redundant—all arising from irregularity and vitiation.

Here then, we have two very opposite states of the liver and its functions. 1st, inordinate action, with increased secretion—the periods gradually shortening. 2d, Torpor of the vessels in the liver, with deficient secretion—the periods progressively lengthening. In both cases, the bile itself is *vitiated*.

We may readily enough conceive how this last comes to pass, by an analogical comparison with what takes place in the stomach during, and subsequent to, a debauch. In both instances, we

may conclude that the chyme passes through the pyloris into the duodenum, in a state less fit for chylification, than during a season of temperance and regularity. So, during the increased secretion, and subsequent inactivity in the liver, the bile passes out into the intestines deteriorated in quality, as well as superabundant or deficient in quantity.

In what this vitiation consists, it is certainly not easy to say. In high degrees of it, attendant on hurried secretion, both the colour and taste are surprisingly altered; since it occasionally assumes all the shades between a deep bottle green and jet black; possessing, at one time, an acidity that sets the teeth on edge; at other times, and indeed, more frequently, an acrimony that seems absolutely to corrode the stomach and fauces, as it passes off by vomiting, and when directed downwards, can be compared to nothing more appropriate than the sensation which one would expect from boiling lead flowing through the intestines. Many a time have I experienced this, and many a time have my patients expressed themselves in similar language. But these are extremes that will be considered under Cholera Morbus, Bilious Fever, Dysentery, &c. The slightly disordered state of the hepatic functions, which we are now considering as primary effects of climate, and within the range of health, may be known by the following symptoms:—Irregularity in the bowels; general langour of body and mind; slight nausea, especially in the mornings, when we attempt to brush our teeth; a yellowish fur about the back part of the tongue; unpleasant taste in the mouth, on getting out of bed; a tinge in the eyes and

complexion, from absorption of bile; the urine high coloured, and a slight irritation in passing it; the appetite impaired, and easily turned against fat or oily victuals. These are the first effects, then, of increased and irregular secretion of bile, and will appear in all degrees, according as we are less or more cautious in avoiding the numerous causes that give additional force to the influence of climate. For example: if I use more than ordinary exercise—expose myself to the heat of the sun—or drink stimulating liquids to-day, an increased and vitiated flow of bile takes place, and to-morrow produces either nausea and sickness at stomach, or a diarrhœa, with gripings and twitchings in my bowels. But a slight degree of inaction or torpor succeeding, both in the liver and intestines, there will probably be no alvine evacuation at all, the ensuing day, till a fresh flow of bile sets all in motion once more. These irregularities, although they may continue a long time without producing much inconvenience, especially if they be not aggravated by excesses; yet they should never be despised, since they inevitably, though insensibly, pave the way for serious derangement in the biliary and digestive organs, unless counteracted by the most rigid temperance, and the prophylactic measures which I shall carefully detail in their proper place. The reciprocal influence and effects which the hepatic and mental functions exercise on each other, will form an interesting inquiry, under the article Hepatitis.

Sec. 4.—Among the primary effects of a hot climate, (for it can hardly be called a disease) we may notice the prickly heat, (Lichen tropicus) a very

Prickly Heat.

troublesome visitor, which few Europeans escape.

This is one of the miseries of a tropical life, and a most unmanageable one it is. From mosquittoes, cock-roaches, ants, and the numerous other tribes of depredators on our *personal* property, we have some defence by night, and, in general, a respite by day; but this unwelcome guest assails us at all, and particularly the most unseasonable hours. Many a time have I been forced to spring from table and abandon the repast, which I had scarcely touched, to writhe about in the open air, for a quarter of an hour; and often have I returned to the charge, with no better success against my ignoble opponent! The night affords no asylum. For some weeks after arriving in India, I seldom could obtain more than an hour's sleep at any one time, before I was compelled to quit my couch, with no small precipitation, and if there were any water at hand, to sluice it over me, for the purpose of allaying the inexpressible irritation! But this was productive of temporary relief only; and what was worse, a more violent paroxysm frequently succeeded.

The sensations arising from prickly heat are perfectly indescribable; being compounded of pricking, itching, tingling, and many other feelings, for which I have no appropriate appellation.

It is usually, but not invariably accompanied by an eruption of vivid, red pimples, not larger in general, than a pin's head, which spread over the breast, arms, thighs, neck, and occasionally along the forehead, close to the hair. This eruption often disappears, in a great measure, when we are sitting quiet, and the skin is cool; but no sooner do we use any exercise that brings out a perspira-

tion, or swallow any warm, or stimulating fluid, such as tea, soup, or wine, than the pimples become elevated, so as to be very distinctly seen, and but too sensibly felt !

Prickly heat, being merely a symptom, not a cause of good health ; its disappearance has been erroneously accused of producing much mischief: hence, the early writers on tropical diseases, harping on the old string of "humoral pathology," speak very seriously of the danger of *repelling*, and the advantage of "encouraging the eruption, by "taking small warm liquors, as tea, coffee, wine, "whey, broth, and nourishing meats."—*Hillary.*

Even the great *modern-ancient*, Dr. Moseley, retails the puerile and exaggerated dangers of his predecessor, in his usual dogmatical tone. "There "is great danger (says he) in repelling the prickly "heat ; therefore cold bathing, and washing the "body with cold water, at the time it is out, is "always to be avoided." Every one cannot boast of being twelve years in a tropical climate, as he can; but this I will say, that every naval surgeon, who has been as many months in a hot climate, must have seen some hundreds, if not thousands plunging into the water, for days and weeks in succession, covered with prickly heat, yet without a single bad consequence ensuing.

Indeed, I never saw it even repelled by the cold bath ; and in my own case, as well as in many others, it rather seemed to aggravate the eruption and disagreeable sensations, especially during the glow which succeeded the immersion. It certainly disappears suddenly sometimes on the *accession* of other diseases, but I never had reason to suppose, that its disappearance *occasioned* them.

Prickly Heat.

I have tried lime juice, hair powder, and a variety of external applications, with little or no benefit. In short, the only means which I ever saw productive of any good effect in mitigating its violence, till the constitution got assimilated to the climate, were—light clothing—temperance in eating and drinking—avoiding all exercise in the heat of the day—open bowels—and last, not least, a determined resolution to resist with stoical apathy its first attacks. To sit quiet and unmoved under its pressure is undoubtedly no easy task, but if we can only muster up fortitude enough to bear with patience the first few minutes of the assault, without being roused into motion, the enemy, like the foiled tiger, will generally sneak off, and leave us victorious for the time.

PART II.

SPECIFIC DISEASES.

ENDEMIC FEVER OF BENGAL,

Commonly called the Marsh Remittent Fever.

SEC. 1.—The importance of this disease will not be questioned, when it is considered, that in the small portion of the Hoogly, running between Calcutta and Kedgeree, full three hundred European sailors (better than a fourth of the ships' crews) fall annual victims to its ravages !* The subject therefore is highly interesting, and must receive a considerable share of our attention.

There is no unmixed good in this world. The inundations of the Nile and the Ganges, while they scatter fertility over the valley of Egypt, and the plains of Bengal, sow with a liberal hand, at the same time, the seeds of dreadful diseases ! Hence, Cairo and Calcutta have severely suffered from the overflowings of their respective rivers.

These consequences are not confined to tropical countries alone. Swamps and marshes, in all latitudes, give rise to intermittents and remittents, varying in degree and danger, according to the heat, rains, and other circumstances of the season. The deleterious influence of an atmosphere, impregnated with marsh effluvia, on the human frame, is in some places astonishing. In the lower districts of Georgia, life is curtailed to forty or fifty years : while in certain swampy situations of

* Vide Capt. Williamson's East India Vade Mecum.

Virginia, (Peterborough) it is asserted that twenty years bound the contracted range of human existence !

I have myself, in rambling through the villages of Beveland and Walcheren, been struck with the conspicuous marks of premature old age, which all, beyond maturity, exhibited; particularly among the peasantry. On enquiring the ages of decrepid wretches, withered, sallow, and apparently on the borders of fourscore, I was surprised to find that fifty-five or sixty years were all they had numbered in these noxious fens. Often have I been asked by inattentive observers, why so unhealthy a country should present so great a number of very old people ? But, to return to the Ganges.

This immense river, originating in the mountains of Tibet, and winding in a South-eastern direction, collecting its tributary streams from all quarters as it proceeds, after a course of more than a thousand miles, bursts its boundaries, in the rainy season, and covers the plains of Bengal with an expansive sheet of turbid water. But the ground springing a little, as it approaches the coast, prevents the inundation from rushing at once into the ocean : it therefore disembogues itself slowly through a multiplicity of channels, that intersect the great Indian Delta, or Sunderbunds, in every possible direction.

This check keeps the plains of Bengal overflowed from the latter end of July till the middle of October ; during which period, noted cities, populous villages, exalted mosques, and stupendous pagodas, are seen just above the level of this temporary ocean, surrounded by innumerable boats, now the habitations of domesticated animals.

Endemic of Bengal.

At this time, vessels even of an hundred tons are beheld traversing the country in various routes, wafted by a breeze that seldom shifts more than a point or two from South. The depth of water during the inundation, varies from ten to thirty feet, according to the undulations of the ground. The original course of rivers is now known only by their currents, which may have a velocity of four miles an hour, on an average, while the great body of water, spread over the plains, moves at the rate of half a mile or a mile in the same space of time.

A chemical analysis of the various impregnations and impurities which the Ganges and its contributory streams sweep down to Bengal, and which either subside in feculence on the soil, or are carried on to the sea, would form an interesting memoir ;—it will be sufficient in this place to glance at a few of them.

The Western bank of the Ganges itself, between Hurdwar and Benares, consists in general of lime, concreted in irregular masses ; and all the rivers which issue from the Western bank are more or less impregnated with the same substance ; while on the opposite bank the waters partake of a strong solution of nitre, with which the plains of Oude, Fyzabad, and Gazeepour, abound. The country lying between the Ganges and the Goomty, on the Eastern bank, is replete with fossil alkali, named "seedgy," giving rise to severe bowel complaints among the natives ; while the swamps of Sasseram are annually in a state of partial corruption, sufficient to occasion the most malignant diseases in the month of November, when the sun's power promotes an astonishing evaporation,

filling the air with miasmata, and spreading destruction among all the living tribes.

The Mahana, the Mutwalla, and various other mountain rivers, that rush into the Ganges between Patna and Boglepore, are frequently tinged with copper. The 12th Battalion of Native Infantry were nearly poisoned by drinking at one of these streams.

But it would be endless to trace all the sources of pollution in the vegetable and mineral kingdoms; one or two only in the animal kingdom will be selected as specimens in that extensive department.

The Hindoo religion enacts, that as soon as the spirit has taken its departure, the body shall be burnt on the banks of the Ganges, and that the ashes, together with every fragment of the funeral pile be committed to the sacred stream. In a country where dissolution and putrefaction are nearly simultaneous, the utility of such a measure is self-evident; but either from indolence or penury, the body is now generally placed on a small hurdle, and when little more than scorched, is pushed off from the shore with a bamboo, there to float until it arrives at the ocean, unless it be previously picked up by a shark or alligator; or, which is frequently the case, dragged ashore by Pariar dogs, and devoured by them, in company with a numerous train of carrion birds of various descriptions. From one hundred to one hundred and fifty of these disgusting objects may be counted passing any one point in the course of a day; and in some places where eddies prevail, a whole vortex of putrid corses may be seen circling about

for hours together! It was very common for us to be obliged to "clear the cable" occasionally, of a human body, speckled over by the partial separation of the cuticle and rete mucosum from putrefaction.

Each contributory stream brings down its full proportion of these ingredients to the general reservoir; since the inland inhabitants have always recourse to that which is most contiguous to their village; and strange as it may appear, where no stream is at hand, the nearest tank, or jeel, performs the vicarious office of the sacred Ganges, supplying drink for the living, and a final receptacle for the dead! We may add, that the banks of this river present, particularly about the rising and setting of the sun, a motley group of all classes, and sometimes both sexes, sacrificing to the Goddess Cloacina, in colloquial association; not indeed offering their gifts in temples, but committing them freely to the passing current.

So born and fed 'mid Tauran's mountain snows,
Pure as his source, awhile young Ganges flows;
Through flow'ry meads his loit'ring way pursues,
And quaffs with gentle lip the nectar'd dews;
Then broad and rough, through wilds unknown to day,
Through woods and swamps, where tigers prowl for prey,
He foams along; and rushing to the main,
Drinks deep pollution from each tainted plain.

I have remarked, that the ground springs a little near the sea, and by resisting the progress of the inundation, lays the more inland plains under water. This is an important circumstance in the medical topography of the country; since the more complete the inundation, the more healthy

are the inhabitants, till the fall of the waters in November and December exposes a number of miry and slimy marshes to the action of a still powerful sun, when those who are in their neighbourhood, are sure to come in for a share of remittents and intermittents.

It is worthy of remark here, that in those years, when the rains are late in setting in, many people are suddenly cut off by the intense heat of the sun in June and July. But this is nothing compared to the havoc produced by a sudden and premature *cessation* of the rains, or *Bursautty*, as they are called. In this last case an immense surface of slime and feculence is all at once exposed to the rays of a vertical sun, that has lost nothing of his power by a Southern declination. The consequence is, that the profuse exhalation of miasmata spreads pestilence and death in every direction; while famine, from the rice being left dry before it has attained maturity, completes the dreadful catastrophe!

But the sunderbunds, and the country, for some way round Calcutta, being in most places rather above the level of high water mark, become, during the rainy season, an immense woody and jungly marsh, neither perfectly overflowed, nor yet quite dry—in a word, presenting a surface as well supplied with animal and vegetable matters in a state of decomposition, and combining all the other circumstances necessary for giving miasmata their full influence on the human body, viz. intense heat, moisture, calms, &c. as perhaps any spot of equal extent on the face of the globe.

These sunderbunds form a belt between the Hoogly and the Megna of about 180 miles in

length, by 50 in depth, completely over-run with forests, underwood, and jungle; and inhabited by animals of various species, who are left to the uninterrupted possession of this frightful territory!

The rainy season commences about the middle of June, and lasts till the middle or latter end of October, though the waters are not drained off low situations till December. During this period, the deluges of rain that appear to come down occasionally "en masse" from the heavens, would almost stagger the belief of any one who had not witnessed them.

The inhabitants and domestic animals of inundated districts are all this time cooped up in a state of ennui, or torpor, which to an active European would be dreadful, had he not a number of mental, as well as corporeal resources for beguiling the tedious hours. But at Calcutta and Diamond harbour it is far otherwise. There the Europeans are not confined, and business must be attended to, as much as during the dry, or the cool and healthy season. It will not, therefore, appear extraordinary, that under all the circumstances related, the marsh remittent fever should make such ravages among all classes, but more particularly among those who are exposed to the sultry heat of the day,—the rains, the dews, and intemperance.

Having sufficiently explored the sources from whence vegeto-animal miasmata take their rise, I shall defer the investigation of their nature, or operation on the human frame, till the fever which they occasion is considered.

Endemic of Bengal.

There can scarcely be conceived a situation of greater anxiety and distress, than that in which a young medical man of any sensibility is placed, on arriving at an unhealthy spot in a foreign climate, unfortified by experience, unaided by advice, and, as is too frequently the case, but scantily supplied with books, containing local accounts of the country and its prevailing diseases.

In such cases, he is forced to explore his way in the dark, agitated and alarmed by the mortality around him ; a great share of which he attributes, perhaps with more remorse than justice, to his own misconduct, or ignorance of the proper treatment !

We arrived in the Hoogly, in the month of September, after a short run of little more than three months from England; which place we left without the least knowledge of our ultimate destination. The fever in question was then making prodigious havoc among the ships' crews at Diamond harbour, and other parts of the river ; nor were we long exempted from its visitation. All circumstances considered, I thought myself fortunate in having in my possession, the works of two celebrated authors, (Clarke and Lind) containing a full account of this fever, drawn from personal observation on the spot. I accordingly

"Read them by day and studied them by night."

In short, I was quite anxious to grapple with this Hydra disease, and shew the power of medicine over this scourge of Europeans.

Many days did not elapse before I had an opportunity of trying my strength against so formidable an opponent, and a very few trials convinced me I had calculated without my host, and that I must use other weapons than those furnished me by Drs. Lind and Clarke, if I meant to be victorious in the contest.

Dr. Clarke's *description* of this fever, however, is so singularly chaste and correct, that were I to draw the picture myself, I must either use his own words, or give a false portrait. I shall therefore only add a few observations of my own in a note, and recommend Dr. C.'s description to be carefully compared with that of the yellow fever in another part of the work.

" This fever attacked in various ways, but commonly began with rigors, *pain* and sickness at stomach; vomiting, head-ache, *oppression on the præcordia*, and great dejection of spirits. Sometimes, without any previous indisposition, the patients fell down in a deliquium, during the continuance of which the countenance was very pale and gloomy; as they began to recover from the fit, they expressed the *pain* they suffered by applying their hands to the *stomach and head;* and after vomiting a considerable quantity of bile, they soon returned to their senses. Sometimes the attack was so sudden, and attended with such *excruciating pain at the stomach*, that I have been obliged to give an opiate immediately.*

* It is a little singular, that Dr. Lind, of Windsor, in his Inaugural Dissertation on this Fever, never once mentions " oppression on the præcordia,"—" pain at the stomach,"—or " fullness and tenderness in the epigastric region." I can

" In whatever form the disease appeared at first, the pulse was small, feeble, and quick,—the pain at the stomach increased, and the vomiting continued. As the paroxysm advanced, the countenance became flushed—the pulse quick and full—the eyes red—tongue furred—thirst intense —head-ache violent, delirium succeeded, and the patient became unmanageable; but a profuse sweat breaking out in twelve or fourteen hours, generally mitigated all the symptoms.

" In the remissions, the pulse, which before was frequently 130, fell to 90. The patient returned to his senses, but complained of great debility; sickness at stomach, and bitter taste in

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safely assert, that I seldom saw an instance in which all of these were wanting—seldom, indeed, an instance in which they were not all present. It is true, that this endemic is not always arrayed in the same colours; but the above-mentioned symptoms are so constantly attendant on fevers, in all hot climates particularly, that the omission of them is rather remarkable.

Dr. Lind mentions a symptom not noticed by Dr. Clark, and which I have often observed. After remarking that bile was frequently ejected both upwards and downwards, he says,—" Vomitus et dejectiones tamen *plerumque albi coloris erant*, calcis aquæ commistæ, vel lactis illius quod lactentes evomunt." Neither of them has mentioned delirium, as often the *first* indication of the fever. Many a time have I been called to see men, whom their messmates represented as " mad;" not in the least suspecting that it was the fever which they were seized with. This symptom generally happened among young men who were employed in boats, and who were not only more exposed than others to marsh effluvia, but to the fervency of the sun by day, and often to the dews and night air. A few instances likewise occurred where the patient attempted to jump over-board. This symptom is not very rare in bilious and other fevers, where there is great congestion or determination to the brain.

the mouth. This interval, which was very short, was succeeded by another paroxysm, in which all the former symptoms were aggravated, particularly the thirst, delirium, pain at the stomach, and vomiting of bile. If the disease was neglected in the beginning, the remissions totally disappeared, and the skin now became moist and clammy; the pulse was small and irregular, the tongue black and crusted, and the pain at the stomach and vomiting of bile became more violent." It is needless to say, that from this period till death closed the scene, the features of this fever were such as characterise the last moments of all violent and fatal fevers.

The unfavourable terminations were generally between the third and seventh day, though in some cases I have seen it go on to the fifteenth or twentieth day; but visceral obstructions were almost always the consequence; and hepatitis or dysentery completed what the fever failed to accomplish. I may add that several cases occurred under my own inspection, where there was a yellowish suffusion on the skin, as in the endemic of the West, with vomiting of matter bearing a considerable similarity to the grounds of coffee. This suffusion of bile, or yellow colour on the skin, is by no means an uncommon symptom in the fevers of the East, as will be shewn hereafter. The natives themselves frequently exhibit this appearance, when extensive epidemics prevail in the lower situations of Bengal, as appears by the following quotation, from Captain Williamson. "Certainly, (says this intelligent officer) it is "common to see whole villages in a state of *jaun-* "*dice*; and in some years the ravages of the

" disease (marsh remittent) are truly formidable." A torpid, or, at least, irregular state of the bowels, almost invariably precedes this fever; unless in cases where the effects of the paludal effluvia are suddenly brought out, by exposure to the intense heat of the sun by day, and the chilling dews and fogs of the nights, among boats' crews. In these, of course, there were few pre-monitory symptoms. In respect to the cure, Dr. Clark asserts, that " nothing is more indispensibly ne- " cessary in the beginning, than to cleanse the " intestinal tubes by gentle *vomits* and purges." * * * * * " As soon as the intestinal tubes have " been thoroughly cleansed, the cure must *entirely* " depend upon giving the Peruvian bark, in as " large doses as the patient's stomach will bear, " without paying *any regard to the remissions, or* " *exacerbations of the fever.*" Such are the plain and easy instructions which Drs. Clark and Lind have left for our guidance in this fearful endemic. They certainly are not, apparently, difficult to follow; and Heaven knows I endeavoured, most religiously, to fulfil every iota of their injunctions; but with what success a single case will shew.

A young man, of a good constitution, in the prime of life and health, had been assisting with several others, to navigate an Indiaman through the Hoogly. The day after he returned, he was seized with the usual symptoms of this fever. I did not see him till the cold stage was past; but the re-action was violent—the head-ache intense—skin burning hot—great oppression about the præcordia, with quick, hard pulse—thirst and nausea. An emetic was prescribed, and towards

the close of its operation discharged a quantity of ill-conditioned bile, both upwards and downwards; soon after which a perspiration broke out, the febrile symptoms subsided, and a remission, almost amounting to an intermission, followed. I now, with an air of confidence, began to "thrown in" the bark; quite sanguine in my expectations of soon checking this formidable disease. But, alas! my triumph was of very short duration; for in a few hours the fever returned with increased violence, and attended with such obstinate vomiting, that although I tried to push on the bark through the paroxysm, by the aid of opium, effervescing draughts, &c. it was all fruitless; for every dose was rejected the moment it was swallowed, and I was forced to abandon the only means by which I had hoped to curb the fury of the disease.

The other methods which I tried need not be enumerated: they were temporising shifts, calculated, in medical language, "to obviate occasional symptoms."

The plain truth was, that I knew not what to do; for the sudden and unexpected failure of that medicine on which I was taught to depend, completely embarrassed me, and before I could make up my mind to any feasible plan of treatment, my patient died, on the third day of his illness, perfectly yellow—vomiting to the last, a dark fluid resembling vitiated bile, and exhibiting an awful specimen of the effects which a Bengal fever is capable of producing, in so short a period, on a European in the vigour of manhood!

With feelings more easily conceived than described, I had the body conveyed to a convenient place, in hopes that dissection might afford some

clue to my future efforts. On laying open the abdomen, I was surprised to find the liver so gorged, as it were, with blood, that it actually fell to pieces on handling it. Indeed, it appeared as if the greater number of the vessels had been broken down, and almost the whole of the interior structure converted into a mass of extravasation. The gall-bladder contained a small quantity of bile, in colour and consistence resembling tar, and the ductus communis choledochus was so thickened in its coats, and contracted in its diameter, that a probe could scarcely be passed into it. Marks of incipient inflammation were visible in some parts of the small intestines, and the internal surface of the stomach exhibited similar appearances. The thorax was not examined, on account of the time taken up in getting at the brain. Marks of turgescence, in the venous system of vessels particularly, were there quite evident, and more than the usual quantity of lymph was found in the ventricles, but no appearance of actual inflammation.

This case requires little comment. It is pretty clear, that it would have required some ingenuity to devise a more injudicious mode of treatment, than that which I pursued. But it taught me an important lesson—it opened my eyes to my own folly, and, pace tantorum virorum, to the oversights of my teachers. It is but too true, that we are nearly as reluctant in acknowledging our failures, as we are forward in blazoning our successes. In so uncertain a science as that of medicine, this has always been a considerable obstacle to its progress and improvement ; since, while we read of the great good fortune of others, and the surprising cures they have performed, and then

find our own so far deficient in that respect, even when we are carefully treading their steps, we despond, and become exceedingly sceptical in regard to the truth of those statements. These reflexions are not meant to bear on the veracity or candour of Dr. Clark, both of which I highly respect :— but as he has only published two unsuccessful cases —" in the most malignant fever he had ever seen in any part of the East Indies,"—viz. the Bengal fever, it may justly be questioned whether he would not have done more good, by detailing a greater proportion of the fatal terminations, than by confining himself to two solitary instances, without a single dissection. A careful perusal of the first of these that occurs on the list (Henry Pope, case 6,) will probably convince the reader that I was not the only person who had mistaken he nature of the disease, and that—

" Aliquando dormitat bonus Homerus."

In fact, the determination to the liver and the brain, is perfectly evident, from the beginning to the end of this case; and although no dissection took place, we cannot, for a moment, doubt the appearance which it would have exhibited.

The impression made on my mind, by the dissection on one hand, and the perusal of Dr. Clark's case (Henry Pope) on the other, determined me to try venesection, notwithstanding the dreadful accounts which Dr. C. himself gives of its fatal effects. I had now several down with the fever; and must confess it was with a trembling arm and palpitating heart, that I first opened a vein, expecting every instant to see my patient die among my hands.

He did not die, however ; nay, he seemed evidently relieved, but the bad symptoms soon returned, and the bleeding was repeated, with brisk evacuations. He recovered.

I now carried the evacuating plan with a high hand, and with much better success than I expected. Fortunately for my patients, a great majority of them were fresh from Europe, and high in health and strength ; these recovered wonderfully, after bleeding and evacuations, though not always.

But there was on board a class of men whom we had pressed out of ships on their return from India, who had experienced, not only the influence of the climate, but of depressing passions, arising from "hope deferred," and the galling disappointment they must have felt, while treading back their steps to a distant country, after they had been on the very point of mingling with their friends and relations at home!

These required a more discriminating mode of treatment. Evacuations at the very beginning were necessary ; but something more was requisite, to clear the congestions from the head and liver. The fluids here, to use a simile, were too stagnant to drain off of their own accord, even when a sluice was opened—they required propulsion.

It would be humiliating to myself, and perhaps uninteresting to my readers, to enumerate the many glaring blunders which I committed, and the false conclusions which I drew, before I arrived at any thing like a steady and successful method of checking this Herculean endemic. Let those whose eagle eye and towering intellect can

penetrate, at a single glance, the secrets of nature, and curb with ease the reins of impetuous disease, place their hands on their breasts (if something within does not prevent them) and thank their God that "*they* are *not* like other men."

But to return to our subject. The first symptom that claims our most serious attention in this disease, is that irritability of the stomach, accompanied by a distressing vomiting. Till this is allayed, nothing can be done towards the cure, by way of medicine. Now venesection has considerable effect in procuring alleviation, even of this symptom. But the dribbling manner in which it is too often performed, when it is ventured on at all, does more harm than good. *Bleed boldly and decisively till the head and præcordia are relieved, or draw no blood whatever.*

While this is doing, a scruple of calomel, with half a grain or a grain of opium, should be immediately given; this will act like a charm on the stomach. I shall prove, in the course of this essay, what, indeed, is well known to many of my brother officers who have served in India, that twenty grains of calomel will act as a *sedative*, and so far from griping and producing hypercatharsis, it will sooth uneasiness, and rather constipate than purge. On this account, in the course of a few hours, when the vomiting is assuaged, some purgative must be given: cathartic extract, with calomel, castor oil, or even salts, which will seldom fail to bring away a most copious discharge of intolerably fœtid, bilious, and fæculent matter, to the unspeakable relief of the head and epigastrium.

If there be now a return of any of those dangerous symptoms, intense head-ache, delirium, or pain in the epigastric region, no apprehension need be entertained of the lancet once more.* Those bugbears, Debility and Putrescency, still paralise the arms of medical men in hot climates, notwithstanding the clearest evidence in favour of venesection, particularly where the subject is lately from Europe, and not broken down by the climate.

Immediately after the operation of the cathartic, the mainspring of the cure must be acted on. For this purpose, from five to ten grains of calomel, according to the urgency of the symptoms, combined with half a grain of opium, should be exhibited every four or six hours, till ptyalism is well raised; when, in nineteen cases out of twenty (I might say forty-nine out of fifty) there will be a remission of all the febrile symptoms, and safety secured. This is undoubtedly the sine qua non, in the medical treatment of this fever, as well as many other fevers in the East.

It is hardly necessary to remark, that emetics are exceedingly doubtful, if not prejudicial medicines in this endemic, since gastric irritability is one of the most distressing and difficult symptoms with which we have to contend. Yet many judicious practitioners, in the navy especially, still employ them, as will be seen hereafter; my own experience, however, and observations are decidedly against them.

* The jugular vein, where the head is oppressed, will be the best exit for the blood.

But, on the other hand, cathartics are eminently useful. There is, in this fever, either an obstinate costiveness, or dysenteric purging; no such thing as natural fæces, tinged with healthy bile, will ever be seen: when such can be obtained by purgatives, a great and evident advantage is gained. It may seem strange that I should recommend calomel and opium anterior to the administration of laxatives: but, independent of the necessity which there is of allaying the irritability of the stomach, whoever will compare the discharge procured by cathartics given *previously* to the calomel and opium, with that which follows the *subsequent* exhibition of them, will decide in favour of the latter plan.

Once every day then, the dose of calomel, usually given every four or six hours, should be conjoined with ten or fifteen grains of ex. colcynth. comp. jalap, or an ounce of castor oil, omitting the opium for that time. These will be sure to bring down a copious alvine evacuation, composed of highly vitiated bile and fœcal sordes, that had been lurking in the convolutions of the intestines and cells of the colon, during that torpid state of the bowels which generally precedes the attack of fever.

This will greatly relieve the oppression and tension of the epigastrium, as well as the headache; indeed so striking is the amelioration of symptoms, after these intestinal evacuations, that in two or three instances I was tempted to follow them up, and try if they might not supersede the necessity of impregnating the system with mercury. I trod here on tender ground; I was forced to measure back my steps, and have recourse in

the end to that powerful and invaluable medicine, but in one case it was too late! Warned by this, whenever I combined a purgative, with the calomel afterwards, I directed a mercurial friction or two to be employed during their operation, to prevent a halt in the pursuit of my ulterior and principal object—ptyalism.

In the mean time, while things are in this train, there are several objects which, though of a secondary consideration, the prudent practitioner will do well to keep in view. In the first place, the patient should be removed to the most airy and cool part of the ship or house; he should be made perfectly clean; and as there is in nine cases out of ten, a great determination to the brain, his feet may be immersed occasionally in warm water. His head should be elevated, shaved, and numerous folds of linen or cotton, moistened with vinegar and water artificially cooled, kept constantly applied to it.

Dr. Mc. Greggor remarks in his Medical Sketches, that the cold-bath did not succeed in the fevers of India. "On my arrival there "(says he) I tried it in several cases, but it "failed. This fever is commonly of the re- "mittent type, there is much reaction; it seems "in most cases *symptomatic of liver affection,* "*and often terminates in hepatitis.*" There is some obscurity in the latter part of this passage; but at all events, Dr. Mc. Greggor cannot allude to the fever under consideration, for although the liver, as I shall hereafter endeavour to prove, is in this, and perhaps in all other fevers, *affected;* yet it would be carrying a theory to extremes to assert, that the Bengal

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Marsh Remittent, confessedly produced by paludal effluvia, in conjunction with heat and moisture, was, "in most cases *symptomatic* of liver affection." It is probable that Dr. Mc. Greggor had not an opportunity of seeing *this* fever; as his observation, in regard to "liver affection," applies more strictly to those fevers denominated "Bilious," which are prevalent at Bombay, the Coast of Coromandel, and other elevated parts of India, in which Dr. Mc. Greggor served.—Vide Sec. 2.

How far the cold affusion in these *last* fevers may be applicable, this is not the place to inquire; but in the Bengal Remittent, it has been practised, time immemorial, among the natives themselves, many a century before a Jackson, a Wright, or a Currie, ever thought or wrote on the subject, as the following quotation from a gentleman *out of the profession*, and who, of course, has no other object than truth in view, will prove.—"We must, "however," says Capt. Williamson, author of Oriental Field Sports, &c. "do the natives the "justice to allow, that the refrigerating principle, "lately adopted by some of our leading physi- "cians, owes its origin solely to the *ancient prac-* "*tice* of the Brahmans, or Hindoo priests, of "whom the generality affect to be deeply skilled "in pharmacy. I believe that, if taken in time, "few fevers would be found to degenerate into "typhus, and that very seldom any determination "towards the liver, in acute cases, would occur, "were the refrigerating course to be adopted. "Often have I known my servants, when attacked "with fever, to *drink cold water* in abundance, "and to apply *wetted cloths to their heads*, with "great success. The *former* has generally

" lowered the pulse considerably, by throwing out a " strong perspiration, while the *latter* has given " immediate local relief."—Vol. 2. p. 308.

I can confirm the truth of this, by experience, acquired long before I knew any thing of this native practice, and to which I was led by the unconquerable head-ache, heat, and throbbing of the temples, which nothing but venesection, and the cold ablutions abovementioned, would completely allay.

Mr. Bruce describes a somewhat similar practice among the natives of Massuah, a very unhealthy island on the borders of Abyssinia.—

" Violent fevers, called the *Nedad*, make " the principal figure in this fatal list, and " generally terminate the third day in death. " If the patient survives till the fifth day, he " very often recovers, by drinking water only, " and throwing a great quantity upon him, even " in his bed, where he is permitted to lie with- " out attempting to make him dry, or change " his bed, till another deluge adds to the first." Shaw's Abridgment, p. 156. Cold water, cold cungee water, or either of these acidulated with tamarinds, chrystals of tartar, or nitrous acid, will be found the most grateful beverage. But it is necessary to remark, that, till the irritability of the stomach is allayed, however urgent may be the thirst, the patient should be restrained from drink, especially in any large quantities. The cold ablution over the surface of the body will help to mitigate the thirst, till the stomach is tranquilised.

Large and repeated blisters to the epigastric region, will be found a most valuable auxiliary

to the above plan of treatment; and where torpor in the lymphatic system is evinced, by difficulty in affecting the mouth with mercury, the denuded surfaces should be dressed with mercurial ointment. With these means in use, I have generally awaited, with a kind of patient anxiety, the first symptoms of ptyalism; and on the third morning, I could frequently perceive a certain odour on the breath, prelusive of salivation. When this last came on *free*, I pronounced my patient to be secure.

But if no symptoms of saturation appeared, I have *then*, or indeed, if things wore an alarming aspect, I have sooner than this, either increased the doses of calomel, exhibited them at shorter intervals, or conjoined with them mercurial frictions. For if relief could not be procured on the third, fourth, or fifth day, the chance of recovery became smaller and smaller in proportion.

This relief sometimes preceded, sometimes succeeded; but was generally synchronous with the visible or sensible effects of mercury on the constitution, as evinced by the gums or breath. A mild and uniform diaphoresis, a refreshing sleep, and the appearance of natural stools, were the usual indications of this happy change; after which, as the ptyalism advanced, the train of morbid symptoms proportionally subsided, till at length the inability to eat, *in consequence of the soreness of the mouth*, became the principal complaint of the patient.

That there may be cases, wherein the use of wine, and even bark, is indispensible, I shall not attempt to deny. But the latter, in particular

I never had occasion to employ, except in cases of protracted convalescence; or to prevent relapses at the full and change of the moon, when such accidents are very liable to happen.

I have only to remark further, that when this fever was combined with dysentery, an occurrence by no means unusual, the same treatment, with the exception of cold external applications, conducted equally to a happy termination.

As the object of this Essay is Utility, and its design, to convey as much information on each subject, in a small space, as possible; it becomes a duty to notice in this place the opinions and practice of a very high medical authority in India—Dr. Balfour, whose abilities and experience entitle him to every respect.

I shall endeavour to condense his doctrine and directions into as few pages as I can, referring to his *second* Treatise on Sol-lunar Influence (Edin. 1790) where these are more explicitly developed than in any of his other publications.

Dr. B. considers the mild and regular intermittent, as well as the more violent and continued Bengal fevers, together with dysentery, as so many grades of the "*putrid intestinal remitting fever*," all of which he pronounces to be *infectious*. He conceives that the contagion proceeds from putrefying or putrid bodies, and which, passing down with the saliva, corrupts the mucus of the stomach and intestines. That *this* putrid matter being absorbed, and carried into the circulation, gives rise to, and accounts

for, the whole train of febrile symptoms. This is his theory, independent of "Sol-lunar Influence," which will be noticed hereafter.

With respect to the cure, he thinks that copious and continued purging would, in general, be sufficient to conduct mild cases to a successful issue; but as we are liable to much deception, he advises that in these, as well as in the most violent fevers of Bengal, after *two days* purging with calomel and other cathartics, to begin, on the *third* morning, to "throw in" the bark in substance, so as to administer two ounces in the course of forty-eight hours. At the expiration of this period, the calomel is to be again repeated at night, and a laxative the next morning; immediately after the operation of which, the bark is to be again reiterated for two days, and in the same manner as before. The purges and bark are thus to be alternated in exactly the above routine, till the disease is finally subdued. To give efficacy to this practice, a liberal use is to be made of opium, not only to keep the bark on the stomach, but to ease pain and procure rest.

With respect to those cases where there is *local affection*, Dr. B. only directs a superior degree of attention to be paid in guarding the body against cold, with occasional blisters and diaphoretics. In some rare cases, where the local affection is violent, he admits of bleeding, both general and local; but all the other plans are to be pursued in the manner prescribed, without any regard to paroxysms, remissions, or exacerbations, whatever.

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These directions from the head of the medical department at Calcutta, might be supposed equivalent to the death-warrant of a mercurial practice, which almost excludes bark, and aims at exciting ptyalism as quickly as possible. Indeed, when I read these passages, I began seriously to consider, whether the impressions on my mind, which I conceived resulted from actual observation, were not the mere phantoms of imagination. In closing the book, however, my eye was attracted by the date of the *Preface*, which was fifteen years subsequent to that of the Treatise itself, viz. Calcutta, 1805.—

"Tempora mutantur, et nos mutamur in illis."

I was here not a little astonished—(to speak with candour, I was gratified)—to find Dr. Balfour "anxious that the young assistant surgeon "should, for some time after his arrival, *defer* "the investigation of *theoretical* questions, and "fix his attention on practical facts." But what was of more consequence, I found that, although Dr B. would not abandon his tried friend, bark, for mercury, he went half-way, and fairly offered a coalition.

"Considering," says he, "that obstructions "of the liver very frequently shew themselves, "in the common fevers of this country, and "may with great reason be suspected, in a cer-"tain degree, *in all*, we cannot hesitate to ad-"mit, as an essential and valuable principle, "in the cure of fevers, *the introduction of mer-"cury into the system, so as to affect the mouth*

" *in a moderate degree*, with the view of remov-
" ing obstructions, or other morbid affections of
" the liver; of obtaining natural secretions, and
" of its thus contributing, *with the other means*
" that have been described, to a speedy and
" permanent cure." (Preface to a Collection of Treatises, &c.)

It is not a little strange, that Dr. Balfour should *now* conceive it necessary to add a new and a different practice to his own, which was *before* so pre-eminently successful, that the *combination* can hardly hope to rival it. " In the
" space of twenty years (second treatise) I can-
" not say that I have met with *any case*, in
" which I conceived bark to be properly admi-
" nistered, and in sufficient quantity, where it
" *ever failed* of securing the patient in the end."

Some of the mercurial party will, no doubt, be malicious enough to insinuate, that after such a declaration as this, the formal admission of a *new*, is tantamount to a virtual renunciation of the *old* remedy.

I have thus given a fair view of two very different modes of treatment (and likewise their combination) in this dangerous disease. I have shewn my own preference for one of them, and I think substantial reasons for such: but I do not wish to blindly condemn the others, because I did not find them successful.

He who treads over the same ground which I have done, will, in every probability, have ample opportunities of putting them all to the trial, and then he may decide on their merits. But I would recommend him not to be too sanguine, nor condemn a practice from a few failures. It has not

been my lot to find intertropical fevers so very tractable as some of my brother-officers have, or say they have, found them. When we read of 118 cases of YELLOW FEVER cured out of 120,* many of us twinkling stars in the medical horizon, may well shrink into worse than insignificance, before a luminary that certainly shines,

——————Velut inter ignes
Luna Minores.——————

But such narrations, "while they make the vulgar stare, cannot but make the sensible grieve." They are too well calculated to create unfounded prejudices against the really meritorious, but *not quite so fortunate,* practitioner, in the minds of those who can seldom appreciate abilities, but by comparative success. When the latter is measured by such a standard as this, the conclusion drawn is obvious.

I should be sorry to suspect, much less accuse, any of my professional brethren of *wilful* misrepresentation; but when *young* medical men are setting forth their cures by a *new* remedy, we may at least be allowed to enter that remarkably significant, though apparently paradoxical caveat of Hippocrates—EXPERIENTIA FALLAX.

As the cold season approaches, the fever changes from an almost continued to a plainly remittent, and finally, in December, to an intermittent form. From this time, for two or three months, the climate of Bengal is cool and delightful; the only

* Currie's Reports, Vol. 2.

diseases being visceral obstructions, the sequelæ of the preceding endemic.

It has already been remarked, that this fever, when epidemic among the natives, occasionally commits the most destructive ravages. But the assimilation of their constitutions to the climate, their singularly abstemious habits, and various other causes, concur to shield them in general from its violence; so that it appears, for the most part, among this class, as an intermittent, but often of great obstinacy.

I have alluded to the *refrigerating practice*, which they have employed, time out of mind, in acute fevers: I shall now advert to some very efficacious native medicines, which they apply to the cure of this disease, especially when it manifests itself in the form of agues, which prove exceedingly troublesome to the inhabitants of villages scattered among the marshy, as well as hilly and jungly districts.

Their first object is the complete evacuation of all bilious and sordid colluvies from the stomach and bowels.

For this purpose, they have recourse to a black purging salt—*Bit-Noben*, or *Kala Neemuck*, a solution of which in water is certainly one of the most nauseous potations that can well be conceived, having an abominable taste, and a flavour resembling rotten eggs, or sulphuretted hydrogen gas. This medicine proves eminently cathartic, and powerfully emulges the liver and its ducts, carrying off vast quantities of vitiated bile, and other offensive fœcal matter, from the intestinal canal. This being effected, the kernel of a seed, produced by a low, creeping kind of cow-itch

(Cœsalpina Bonducella) called by the natives, *Kaut-Kullagee,* or *Catcaranja Nut,* is taken to complete the cure.

The kernel is intensely bitter, and possesses the tonic or febrifuge powers of Peruvian bark, in a very high degree. But it has a manifest advantage over the latter; for, instead of producing any constipating effects in the bowels, it, on the contrary, proves mildly laxative. It may be easily conceived that, in a tropical country, where the biliary system is so commonly deranged, such a qualification is of incalculable utility. One of the kernels, pounded into a paste, with three or four corns of pepper, and taken three, four, or five times a day, in conjunction with the decoction of Cherettah [Gentiana Cherayita] is found so generally successful in curing intermittents, that it is adopted by many European practitioners; and will probably, at no distant period, supersede entirely the bark, to which it seems infinitely preferable in a hot climate, on account of the aforesaid aperient quality.

The *Cherettah* is a species of gentian, indigenous in the mountainous countries north of the Ganges, and is to be procured in every bazar throughout Bengal. It possesses all the properties ascribed to the gentiana lutea, and in a greater degree than are to be found in the latter root as it comes to us. The decoction of this herb forms a powerful auxiliary to the caranja nut, and their united efficacy in curing intermittents is undisputed.

Marsh Miasma.

CAUSE OF FEVER.

It is now pretty universally agreed, that the *remote cause* of remitting and intermitting fevers, can be traced to vegeto-animal miasmata, or marsh exhalation; but the nature of this powerful, though invisible agent, is almost entirely unknown. With many of its laws and effects, indeed, we are well acquainted; but, like the matter of contagion, it has ever eluded the eye, and the investigation of the physician and chymist. These miasms arise from the wide-extended bosom of the earth, wherever animal and vegetable substances are lying in a state of decomposition; but in a tropical climate, where heat and moisture give, not only activity to the *agent*, but a predisposition for its reception to the *subject*, their united effects are tremendous!

It is scarcely worth while to notice the various conjectures that have been formed respecting the *nature* of marsh effluvium. A modern author supposes it to be the "exuberant principle of vegetation."

"It would appear," says Dr. Jackson, "that "the materials of vegetation abounding in excess, "acted upon by a powerful cause, give out a prin- "ciple, which, not being expended in the growth "and nourishment of plants, is diffused to a cer- "tain extent in the atmosphere, occasioning a de- "rangement of such bodies as come within the "sphere of its action."*

* Jackson on Fever, p. 105.

Marsh Miasma.

It is needless to say, that, allowing this to be the case, we are no wiser than before; since this "principle of vegetation" is just as inscrutable as vegeto-animal miasmata.

On the other hand, Dr. Currie,* an American gentleman, denies the existence of miasmata, and makes a diminution of oxygen and superabundance of azote in the atmosphere, the cause of remittents and intermittents in marshy situations. That nitrogen and carbonic acid gasses must be extricated, and abound, during the decomposition of vegetable and animal matters, cannot be doubted; yet few, I believe, will contend, that *disproportion alone,* in the component parts of the atmosphere, and not specific miasms, is the remote cause of fever.

Among the means of correcting this azotic atmosphere of marshy countries, Dr. Currie *seriously* proposes the extrication of oxygen from nitre!— "A large portion," says he, "of oxygen may be "furnished by the decomposition of nitre;—a "pound will furnish 800 ounces." Now, since Bengal produces as much of this article as most other places, it seems very strange, that the Honourable East-India Company have not, before this, taken the transatlantic hint, and purified the air of the Sunderbunds, by lighting up saltpetre bonfires along the banks of the Hoogly, from Saugur Roads to Calcutta.

But as the laws which govern, and the effects which are produced by marsh effluvium, are much more interesting than the most ingenious specula-

* American Philosophical Transactions.

tions respecting its nature and chemical properties, I shall confine myself principally to the useful and practical part of the subject.

Drs. Lind and Clark dwell much on the putrefying animal and vegetable substances left on the miry shores of the Hoogly by each retiring tide; attributing a considerable share of malignity to the noxious exhalations arising from this source, during the intervals of high water, both by day and night. The argument is more specious than solid; and perhaps it is not founded on accurate or discriminating observation.

During the months of August and September, for instance, when fevers rage with their greatest violence, the rivers are swelled to the summits of their banks by the inundation, and the volume of water disgorged into the ocean is so immense, that the stream is perfectly fresh, and the flood tide scarcely felt at Calcutta; consequently, the rise and fall are comparatively insignificant. But in May and the beginning of June, on the other hand, when the rivers are shrunk far within their autumnal boundaries; when the heat is excessive; and when the tides are so rapid, that the *bore*, as it is called, rushes up past Calcutta, sometimes with the amazing velocity of *twenty miles an hour*, not entirely stopping till it reaches Nia-serai, thirty-five miles above the capital; then, indeed, at low water, each side of the river presents a broad shelving slope of mud and mire, covered with vegeto-animal remains in all stages of putrefaction, and disengaging the most abominable stench,—yet no ill effects whatever are produced by such exhalations.

Marsh Miasma.

For the solution of this phenomenon, we must look to the tides themselves, which, sweeping along these shores every flood and ebb, never allow sufficient time for the extrication of that noxious effluvium, which arises from the *stagnant surface* of marshes, either *partially* covered, or just deserted by *annual,* not *diurnal* inundations. Such marshes [and jungles which produce a similar effect] spread far and wide in every direction along the banks of this river, during, and for some time subsequent to, the rainy season; to these, therefore, and not to daily overflowed places, are we indebted for all the sickness and mortality we so fatally experience.

Another circumstance may probably contribute its share in correcting these exhalations at the period alluded to. During the inundation, the waters of this river are quite *fresh,* though turbid; whereas, in the dry season, when the tides are strong, a considerable proportion of *salt water* comes up every flood, and renders the stream, even at Calcutta, so brackish, as to occasion smart bowel complaints among those who drink of it at this time. A mixture of salt water with fresh, therefore, does not, as was supposed by Sir John Pringle, *increase* the noxiousness of marshy exhalations; on the contrary, we find, in this instance, that they are quite harmless, while rising from these extensive shores, when the water is considerably impregnated with marine salt. In respect to the marshes that run back from the river, they cannot, *during the inundation,* be more subject to flux and reflux than the river itself. The shores of all inlets and minor streams are under exactly

similar circumstances to those I have stated of the Hoogly; and, finally, I may add, that it is the water of *inundations alone*, not tides, that ever bursts over the banks of the Ganges, to cover the adjoining plains; consequently the *marshes* are not subject to diurnal flux and reflux. I have been the more particular on this point, in order to set in a clear light the *validity* of those reasons which induced Dr. Lind of Windsor to read the recantation of his medical faith in *lunar influence*, in favour of "*the increased effluvia disengaged from the shores and neighbouring marshes at each retiring spring tide.*" Never was the fable of "dropping the substance to grasp at the shadow" more completely exemplified, than in this instance, which shews that "second thoughts are *not always* best." I much wonder that the ingenious Dr. Balfour, while lamenting the defection of his quondam supporter, did not adduce this unanswerable refutation, among others, of Dr. Lind's hypothesis.

In so luxuriant a climate as that of Bengal, and on so fertile an alluvion as the Delta of the Ganges, we may well suppose, that every spot,—almost every particle of matter, teems with animal as well as vegetable life. As the scale of existence descends, in the animal kingdom, the amazing circle of reproduction and decay is perpetually trodden by myriads of animated beings, whose ephemeral vitality has scarcely commenced, before it closes again in death! No sooner has the etherial spark—the "divinæ particula auræ," deserted its tenement, than the *latter* is resolved, by the heat and moisture of the climate, into its consti-

tuent materials, and formed without delay into other compounds :—

> " With ceaseless change the restless atoms pass
> " From life to life, a transmigrating mass."

It is during this dissolution of animal and vegetable remains, preparatory to new combinations and successive reproduction, that a certain inexplicable something is extricated, which operates with such powerful and baleful influence on the functions of the human frame.

This exhalation is capable of concentration, or rather accumulation ; for when it is detained amid woods and jungles, as at this place, and especially during the rainy season, when there are no regular breezes to dissipate it, and when the beams of the sun are obscured, except at intervals, by dense clouds, it becomes exceedingly powerful, as the annual mortality too plainly proves.

That the exhalation of these miasmata, and their diffusion in the atmosphere, should be greater during the heat of the day than at night, when the air is raw and cold, appears more than probable ; and yet an idea seems to prevail, that they arise from fens and marshes principally in the night. " The nature of an unhealthy, swampy soil," says Dr. Lind, " is such, that no sooner the sun-beams " are withdrawn, than the *vapour emitted* from it " renders the air raw, damp, and chilling in the " most sultry climates." It is difficult to imagine how dews *descend* and vapours *rise*, at the same time. Nevertheless, it is certainly true, that the stench emitted immediately after sunset, is

much more perceptible to the senses than at any other period of the day. The reason of this is, that the shores and marshes *retain* their heat for some time *after* the rays of the sun are withdrawn, and consequently *continue* to emit vapours, which are not exhaled and diffused through the atmosphere, as by the sun and high temperature of the day; they therefore meet the descending dews and cool air, condensing and forming a thick fog, which hovers over the swamps, accompanied by a noxious and disagreeable odour. To this we must add, that the miasmata exhaled during the day, in all probability descend with the dews of the evening, and by meeting and combining with those that *continue* to be disengaged from their source, must form a concentration highly capable of affecting the constitution.

We accordingly find, that four out of five of those who suffer, are attacked, or receive the deleterious principle, at the period abovementioned.

Experience has shewn that *marsh* effluvium, though by no means so limited as *human*, does not occupy a wide range: at least, it becomes innoxious at a certain distance from its source, in consequence of dilution. The circumstance mentioned by Dr. J. Hunter, and confirmed by subsequent observations—namely, that "the difference of a few feet in *height* gives a comparative "security to soldiers quartered in the same building," will be accounted for by the supposition which I have already stated, viz. *That as the miasms exhaled during the day descend in the evenings, they become more and more concentrated; till, meeting the exhalations from the still*

reeking marshes, a dense stratum of highly impregnated atmosphere is formed close to the surface of the earth. Hence the superior degree of salubrity in the *upper* ranges of buildings; and, on the contrary, the extreme danger of sleeping on the ground in such places; many instances of which are recorded in the writings of Lind, Bontius, &c. &c. &c.

I am the more inclined to believe that vegeto-animal miasmata descend with the dews, and are *then* more formidable than in their ascent by day, from a circumstance that occurred to myself in October 1805.

Having occasion to take a passage from Madras to Calcutta in a foreign merchantman at that time I sat late on deck, one evening after our arrival in the Ganges, the vessel being at anchor a mile from the shore, and not a breath of wind moving in any direction. As the dews began to fall, I perceived, all at once, a faint, heavy odour, to account for which I was much puzzled, as there was no breeze to waft any exhalation from the adjacent shores. My reflections were soon interrupted, however, by a sense of faintness, giddiness, and at length, nausea, with which I was suddenly affected. I immediately went below, not a little alarmed, and fully persuaded that I was seized with the fever, whose effects I had so much reason to dread. On drinking some warm water, to clear my stomach, I took a dose of calomel and opium, and next morning, castor oil. Although no farther symptoms of fever occurred, yet I felt an unusual degree of lassitude and depression of spirits for some days after I got to Calcutta.

Marsh Miasma.

The same is often felt on crossing the pontine marshes in Italy; and Dr. Moseley remarks, that he has felt a *shiver,* while passing the swamps to the west of Kingston, especially near the *ferry,* before the sun had dispersed the vapours.*

The following remark of Dr. Lind's is favourable to the supposition of miasmata descending with the dews: "The first rains that fall in Gui-"nea are commonly supposed to be the most un-"healthy; they have been known, in forty-eight "hours, to render the leather of shoes quite "mouldy and rotten." "It has been further "observed, that woollen cloths wet in those "rains, and afterwards hung up to dry in the "sun, have sometimes become full of maggots in "a few hours." It is natural to suppose, that whatever exhalations arose, and were floating in the atmosphere, previous to the rainy season, would descend with the first showers, on the same principle as the miasmata exhaled during the day descend with the dews of the night. †

* Page 52.

† In the months of September and October, 1799, while the Leopard and Centurion, two of Admiral Blankett's squadron, were working up from Mocha to Juddah, along the Arabian coast, they were considerably harrassed (the Leopard in particular) with a low fever, not of the remittent type, accompanied with great head-ache, weak, small, and quick pulse, pain at the stomach, and over the epigastric region, frequent bilious vomiting and purging, with uncommon debility and dejection of spirits. The days at this time were oppressively hot; the thermometer generally at 97°; the nights cool. But what was most singular, a copious fall of dew took place every night, *perfectly salt and bitter to the taste.* To this the fever was ascribed; and what corroborated the suspicion was, that the Leopard's crew slept exposed to the

Marsh Miasma.

This view of the subject leads to a practical inference of considerable utility, viz. that when necessity compels us to penetrate through those insalubrious woods, jungles, or marshes, we should select that point of time in which we are *least likely* to meet those miasms, whether in their ascending or descending state. This period seems to extend *from three to six o'clock in the afternoon;* that is, *after* the greatest heat of the earth and air, and, consequently, the greatest evaporation; and *before* the condensation and return of such exhalations as rose during the day, and which combine with those still issuing from the heated soil, for some time after sunset. It is but too well known, that the cool of the morning, of the evening, nay, in many instances, of the night, is generally pitched upon for wooding, watering, and other duties on shore, to the great risk of those concerned in such dangerous occupations.

An attention to the above rule [founded on facts as well as reasoning] would certainly be productive of much good; particularly when it is considered, that the human frame, during the portion of time above alluded to, is, perhaps, better fortified against the impression of marsh efflu-

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nocturnal vapours, and suffered ten times the sickness which occurred in the Centurion.

In the latter ship no medicine was found to check the bilious purging and vomiting so well as calomel and opium. The addition of antimonial powder was afterwards made. When debility only remained, decoction of bark with nitrous acid, was found useful. In some cases, attended with great febrile stricture on the skin, the cold ablutions were used with success. In the Leopard some mortality prevailed.

vium, or other debilitating causes, than at any previous or subsequent period in the twenty-four hours. The seaman makes his principal meal at mid-day; he is then served his allowance of wine or spirits, and if a couple of hours rest is allowed at dinner, his energy and strength are much greater at three o'clock, than early in the morning or late at night. The European may object to this, by observing that the body and mind, recruited by sleep, are most vigorous in the morning. But I well know, from personal experience, that in tropical climates, and particularly during the rainy season, which compels all classes to pass the night between decks, the rest obtained from interrupted, I might say, stifled sleep, is very trifling. Indeed a general languor, lassitude, and want of appetite, prevail till towards noon, when dinner, wine, and an hour or two of repose, give a tone and activity to the system, which continue till the evening. This is the time, therefore, when we can resist the agency of marsh effluvium better than at any other, and of course should be selected, especially since it is at this period that the miasmata are most diffused through the higher regions of the atmosphere, and consequently less potent in themselves. The next three or four hours, viz. from six till nine or ten o'clock, appear to be pregnant with danger to those on shore. Within the tropics there is little or no twilight; immediately the sun withdraws his beams [six o'clock] every thing is involved in darkness; dews and vapours *fall* from the upper regions of the air, and exhalations still continue to spring from the tepid marshes to meet them. At this juncture, therefore, in the places and seasons alluded to, the stratum of

atmosphere in immediate contact with the surface of the earth, must be highly saturated with a principle but too destructive to human health and life; and the system is *then*, too, disposed to its reception, in consequence of the exhaustion produced by the heat and labours of the day, and the torpor induced by the coldness of the evenings.

This reasoning will be illustrated and confirmed by the following authentic particulars. In the month of November, 1804, two parties of men, belonging to His Majesty's Ship Tremendous, were employed on shore, at the Island of Madagascar; one party, during the night, filling water, the other cutting wood during the day. Four of the night party were attacked with the endemic fever of the country, and three of them died. The whole of the day party escaped the fever, though exposed to an intense sun, in the laborious occupation of wood-cutting.

About two years after this, His Majesty's ship Sceptre, in the same place, and upon a similar occasion, experienced a still greater disaster among her watering or night party, to whom the mortality was confined. Some interesting particulars respecting this fatal occurrence, I shall give in the words of the surgeon.

"The fever which attacked our watering parties at the Island of Madagascar, bears a striking resemblance to the endemic fever of the west;—like that too, it was not a contagious disease, of which we had the most cogent proofs, and corroborated what we witnessed at a former period. I believe that the exciting cause of this disease was confined to the scite of the watering place, as no person was affected upon the wooding party,

though *constantly exposed during the day.* The deleterious effects of nocturnal exposure were particularly exemplified here, by the disease raging most violently among the marines, who were on shore at night for the protection of the casks, and to whom the mortality was confined. The fever made its appearance among some of the same party who did *not* pass the night on shore, but in them it was infinitely milder, though similar in type and general symptoms. The watering place was encompassed from the sea by an amphitheatre of hills; and in nearly the centre of this ran the rivulet from which we filled, situated in a *marshy plain,* surrounded with some trees of the palm kind, and a thicket of *jungle.* The wooding place, on the other hand, was a *dry sandy soil,* though standing equally low, and covered with brush-wood, jungle, &c. in the same manner as the other. As the more minute features of the disease are described in the journal, I shall only remark, that it exhibited something of the remittent type, inasmuch as the paroxysms were more conspicuous and violent on alternate days; and on the intermediate, the system seemed less oppressed and more tranquil, with a different cast of features in the countenance; but there never was any thing like an apyrexia. The general treatment adopted in these cases, and which the journal developes, consisted in bloodletting, purging, and exciting ptyalism; the pre-eminence of which practice, several years experience in this country has amply confirmed. My sentiments have been so often expressed on venesection, that I need not repeat them. With respect to purgatives, I have always observed the greatest relief to follow, when they

took full effect. That they are beneficial in every stage of the disease, I infer from this;—that the pulse, from being depressed, weak, and void of energy, becomes open, energetic, and bounding to the surface, with a corresponding animation in the countenance, after copious catharsis, even in the last stage of debility.

The next and only remedy, where bloodletting and purging do not check the disease at once, in its infancy, is mercury, to excite ptyalism. I say ptyalism, for *soreness of the mouth* will not secure the patient in this endemic. In many of the *fatal* terminations, the mouth was slightly affected; but we never were able to excite ptyalism. Wherever this last could be induced, a revolution, as it were, in the whole train of morbid symptoms, instantly succeeded, and a healthy train supplied their place! This revolution was most strikingly evinced in the functions of the bowels, by the evacuations becoming, all at once, copious and feculent; a circumstance which, previous to ptyalism, no purgative, even of the most drastic nature, could effect."

Although the latter part of this documeut is foreign to the subject for which it was introduced, yet I trust it will be considered interesting. It is satisfactory to me, since it strongly corroborates what I have advanced lately on the treatment of the Bengal endemic, both in respect to bleeding and ptyalism; the former being rather *heterodox* in India. I have only to remark, in reference to the striking coincidence of our practical views, that the above document was never penned for my inspection, nor that of the public. The sensible and well-informed author of it (Mr. Neill) is

alive, and can contradict any misrepresentation of his sentiments.

I shall here observe, once for all, that the foregoing remark will equally apply to all other documents and narratives introduced into this Essay, in addition to my own personal observations. They are strictly authentic; being the spontaneous records of facts, commemorated without preconceived theory or preconcerted design. I need not say how much their value is enhanced by this consideration.

In the account of the Batavian endemic, some other striking instances, corroborative of the opinions here advanced, will be related. In the mean time, the above examples will be sufficient to justify the rules I have laid down, and put future navigators on their guard, where disease and danger lurk in concealment.

And here I cannot help noticing the apathy or impolicy, which still allows Diamond Harbour, the principal anchorage of our Indiamen, to continue backed and flanked by woods, jungles, and marshes, to the annual destruction of one-fourth of the crews of such ships as load and unload at this place! The objection to clearing the Sunderbunds, has been founded on the idea of their presenting an impenetrable barrier to the incursions of an enemy from that quarter; but the Government does not seem to be aware, that to secure us from a *domestic* foe, it is by no means necessary, *in this instance,* to throw open the way to a *foreign.* A semicircle of cleared and drained ground, even of six miles in radius, [not a thirtieth part of the Sunderbunds, and scooped as it were out of their centre] would sufficiently protect the anchorage

and warehouses of Diamond Harbour, from the baleful influence of those exhalations we have been describing

That the woods and jungles might be cleared, admits of no doubt; and that the country round Diamond Point might either be drained, overflowed, or submitted to the flux and reflux of the tides, any one of which measures would afford comparative security, can hardly be denied. To add to this security, one or two narrow semicircular belts of wood might be interposed between Diamond Harbour and the confines of the cleared space, to arrest any effluvium disengaged from the surrounding wilds or marshes, and conveyed by the breezes towards the aforesaid anchorage. All writers agree, that marsh miasmata, although much less limited in their range than the matter of contagion, would be perfectly harmless after traversing a much shorter route than that proposed; but where native labour can be so easily procured; indeed, where the convicts alone would be equal to the undertaking in a very few years; and finally when it is considered, that this salutary step opens not any facility to the irruption of an enemy on the southern frontier of Bengal, we can hardly doubt that the attention of the Company will, ere long, be directed to so important a measure. Till then, we can only remark, that the farther from shore, and the lower down the river ships lie, so much more healthy will be the crews. On this account Saugur Road is more eligible, in regard to salubrity, than Kedgeree; and the latter much less dangerous than Culpee or Diamond Harbour. This was amply proved by the comparative mortality in the Caroline, Howe, and Medusa frigates.

The two latter, by anchoring higher up than the former, lost at least six times as many men, from fevers and fluxes. Indeed, one was obliged to take a cruise to sea, and the other to retreat back to Saugur Roads, to avoid depopulation! Some suggestions will be given hereafter, in regard to the means of obviating the effects of marsh effluvium, even at Diamond Harbour, the focus of this destructive principle.

In what manner, or through what channel it is conveyed to the sensorium, so as to produce its effects on the constitution, we are nearly ignorant. A general idea prevails, that the stomach is the medium through which the matter of contagion acts; and, by analogy, that marsh miasmata take the same course. But when we consider, that at each inspiration the atmosphere impregnated with this principle is largely applied to the delicate texture of the lungs, it is not difficult to conceive, that it may pass into the blood, [if it is in any case absorbed] as readily as oxygen. There are, besides, the schneiderian, and other membranes of the nares and fauces, to which it must have constant access, while there is but one way for it to pass into the stomach, viz. along with the saliva or food. Further, when we see this principle, in a concentrated state, produce fever in a very few hours, with high delirium, can we suppose that it enters the system by the circuitous route of the alimentary canal and lacteals? If it be said that it acts through the medium of the nerves of the stomach, why not through that of the olfactory, which is a shorter road? Indeed, from a near view of its *effects*, there is every reason to suppose

that the brain and nervous system suffer the first impression and shock. To these *effects*, then, we are to direct our attention.

I believe it is nearly a unanimous opinion, at present, that both marsh and human effluvia are directly sedative or debilitating in their nature. Dr. Rush, indeed, uses the term, "stimulus of contagion" in almost every page of his work on Yellow Fever; but, like the more celebrated "stimulus of necessity," it may be quietly laid in the "tomb of all the Capulets." By Dr. Jackson, the cause of fever is compared to electricity. "It seems to accumulate in the system "by a regular but unknown process: in a cer- "tain state of accumulation, it seems to explode "in a manner similar to the explosions of elec- "tricity."* The delirium and violent action early apparent in the jungle fever, might countenance the idea of a stimulus, and that the subsequent debility was of the *indirect* kind. I have heard this opinion maintained on the spot, by medical gentlemen; but if we narrowly inspect the train of morbid symptoms, we find more of *irregular* than *increased* action; more of apparent than real strength. If we carefully observe the delirious patient, writhing and struggling under the first impression of this cause, we find the efforts not only momentary and less effective than healthy exertions, but accompanied, even at the instant, and immediately succeeded by tremor and other marks of debility. The premonitory symptoms too, are all indi-

* Outlines of Fever, p. 247.

cative of decreased sensorial energy. The mind is wavering and unsteady; the appetite languid; the secretions, particularly the biliary, diminished; and the bowels torpid. Notwithstanding the determined phraseology of Dr. Rush, therefore, we may still adhere to the opinion of the venerable Cullen, that marsh, as well as human effluvium, is *sedative*. Dr. Jackson, indeed, will not allow it to be either stimulant or sedative, but a kind of *irritant*; yet he gradually slides into the admission of its sedative nature: "It however appears, from the "most general view of things, that the febrile "cause is a cause of irritation, disturbing, but "*not increasing* in a natural manner, the action "of the moving fibre. On the contrary, inter-"rupting, impeding, and as it were *suspending* "the operation essential to health and life; by "which means the expression of its effects "principally consists in *debility and impaired* "energy."*

The space of time which intervenes between the application of this poison to the system and its ostensible operation in the form of fever, depends on the degree of its concentration, and the predisposition of the patient. It will, for instance, be found in some places so powerful, that a man in perfect health, by remaining on shore during the night, in marshy situations, and wet or autumnal seasons, shall have the fever violently the next day, and die on the third or fourth. On the other hand, it may be

* Outlines of Fever, p. 253.

applied in so dilute a state, as to require eighteen, twenty, or even thirty days,* to bring on fever; and even then, perhaps, only in consequence of some of the numerous predisposing or *auxiliary* causes concurring to enable the *original* to develope itself. If we take the medium of these two extremes, we shall have the ordinary period, viz. twelve or fourteen days, which elapses between the reception of vegeto-animal miasmata into the body, and their manifestation, in the shape of actual disease.

We see, then, this important agent greatly varying in force; and from standing occasionally the unaided *principal*,—the "instar omnium," in the production of fever, dwindle away till it can scarcely be distinguished, at least not prominently so, among the train of *auxiliaries*.

Such being the case, is it not possible that where the *latter* are numerous or powerful, they may, in some instances, induce the aforesaid disease, without the assistance of marsh exhalation?

* Dr. Jackson says two months, and Dr. Bancroft nine or ten.

PREDISPOSING AND EXCITING CAUSES.

We now come to the Predisposing or Exciting Causes, which are entitled to an equal, if not a superior degree of attention, to that which has been bestowed on the remote.

These may be divided into mental and corporeal. Of the former, none are so conspicuous as the *depressing passions;* and of these Dr. Clark informs us, that FEAR produced the most striking and sudden effects, in aiding the remote cause of fever. This may, in some measure, account for the ravages which the yellow fever commits among newly arrived Europeans, who are prepossessed with the idea and dread of this terrible scourge.

I have, indeed, remarked that most of those, who were of a timid disposition, and easily alarmed at the prevalence of the endemic diseases of the country, fell under their influence sooner than those of a contrary temperament. But grief, disappointment, and chagrin were the depressing passions, which universally induced the most decided and unequivocal predisposition to disease. I saw many strong and melancholy instances of this among that part of our crew, which we pressed within sight of their own shores, and probably of their own habitations, when we were commencing our voyage to India. They were among the first and worst cases which I had under my care, and afforded ample proofs, that mental despondency can as-

celerate the attack, and render difficult the cure, of intertropical fevers in particular. I have since seen the influence of this predisposing cause on a large scale;—not on the banks of the Ganges, but much nearer home—on the banks of the Scheldt.

When our army lay entrenched under the walls of Flushing, without any other defence from the sun, the rains and the dews, than some brushwood or straw;—generally, indeed, with the humid earth for their beds, and the canopy of heaven for their curtains; still, with all these disadvantages, the animating prospect of success, the mental energy inspired by *hope*, united with corporeal activity, kept the whole army in health. When Flushing surrendered, however, and another object was not *instantly* held out for pursuit or attainment, a fatal pause took place, and a kind of torpor, or rather exhaustion ensued, during which, the remote cause of fever, viz. vegeto-animal miasmata, began to make some impression. But when from the ramparts of Batz, we clearly discovered with our glasses a strong boom crossing the Scheldt from Fort Lillo,—the surrounding country in a state of inundation, and various other insuperable obstacles between us and the "*ulterior objects*" of the expedition;—then, indeed, the depressing passions, and some other predisposing or exciting causes communicated a fearful activity to marsh effluvium, which rivaled in its effects, any thing that has been seen even in tropical climates!

It is an old complaint, that the medical topography, and healthy or unhealthy seasons of a

country, are too often neglected in military and naval operations. Yet one would suppose that within sixteen or eighteen hours communication of London, every medical and political expedient would have been speedily devised and applied, on such an emergency as this. But certain it is, that the army did not avail itself of some local advantages that presented themselves among these noxious islands. Walcheren, for instance, is bounded all the way round from Flushing by West Chapel, nearly to Camp Vere—two-thirds of its circumference, by a chain of sand-hills, from twenty to thirty feet in elevation above the level of the interjacent plains. These hills were not only dry, but open to the westernly winds which blew from the sea, and were then very prevalent. On these, therefore, had the soldiers, who *continued* in Walcheren after the fall of Flushing, been *tented*, the elevated scite, combining with other local peculiarities, would, in all probability, have kept them entirely out of the range of those exhalations which covered the country below.

On the other hand, although Beveland did not present such a favourable situation to the rest of the army, yet, had they been provided with *tents*, the numerous mounds or embankments, which not only defend the island from the highest rise of the Scheldt, but intersect the country in every possible direction, frequently planted on each side with trees, and raised twelve or fourteen feet above the surface of the soil, would have afforded excellent encampments, where the men, under the immediate inspection of their officers, would have been se-

cured from intemperance and other irregularities, the inevitable consequences of being quartered in towns and villages, often in churches, barns, and other damp, unhealthy habitations, throughout Walcheren and Beveland. But, unfortunately, *tents* were not considered a necessary part of the baggage on this expedition. The French general, too, having opened the sluices, and *partially inundated* the country round Flushing, increased the force of the endemic. Indeed, the road leading from the last-mentioned place to Middleburg, might at this time vie, in respect to insalubrity, with any through the pontine fens of Italy. Lenity towards the *inhabitants* arrested the progress of the inundation before it was complete; policy in guarding the health of *our own army*, would perhaps have suffered it to continue till the cessation of the autumnal heats, and the commencement of cold weather and frost.

Nothing could more clearly prove the limited range of marsh effluvium, than the contrast between the health of the navy and that of the army. Although the ships were distributed all along the shores of Walcheren and Beveland, from Flushing to Batz, most of them within a cable's length of the banks, yet no sickness occurred, except among such parts of the crews as were much employed on shore, and remained there during the nights. Most officers of ships, and many of the men, were in the habit of making excursions through all parts of the islands, by day, with complete immunity from fever. The night was here, as in sultry climates, the period of danger.

One more remark shall close this digression. We all remember the popular, or rather political outcry, that was made about the scarcity of bark: had the lancet, aided by calomel, and occasionally by jalap, been judiciously, but boldly and decisively employed, the physicians of London and Edinburgh would not perhaps, since that period, have been so often consulted for indurations and obstructions in the liver and spleen, with many other melancholy sequelæ of that destructive fever!

But, to return. One would suppose that, in a tropical climate, where nature is ever arrayed in her gayest livery, the cloudless skies above, and exuberant fertility around, would conspire to impart a degree of elasticity (if I am allowed the term) and exhilaration to the mind, similar to what we feel in Europe, at the approach of spring or summer. The reverse of this is the case. The animal spirits are, in general, below par; and the same cause of grief or disappointment, which in England would be borne with philosophical resignation, or perhaps indifference, will, in India, greatly predispose to all the diseases of the country, and very probably terminate the mortal career of the unhappy object.

The following melancholy facts are strikingly illustrative of this remark. His Majesty's ship Russel (74) sailed from Madras on the 22d. October, 1806, and arrived at Batavia on the 27th November; the crew healthy, and their minds highly elated with the sanguine expectations of surprising the Dutch squadron there. Such, however, was their sudden disappointment, and concomitant mental dejection, on missing the object

of their hopes, that they began immediately to fall ill, ten, twelve, or fourteen, per day, till nearly 200 men were laid up with *scurvy*, scorbutic fluxes, and hepatic complaints! Of these, upwards of 30 died before they got back to Bombay, and more than 50 were sent to the hospital there. The Albion did not fare better—the Powerful fared worse: so that, in these three ships only, in the short space of a few months, *full* 100 *men died on board*, and double that number were sent to hospitals, many of whom afterwards fell victims to the diseases specified; aggravated, and in a great measure engendered, by mental despondency.

Numerous are the instances of a similar nature, though on a smaller scale, which I could relate; but the above specimen is sufficient. The converse of this position is equally surprising: thus, success or good fortune will as forcibly counteract, as the contrary will predispose to, the malignant effects of climate. A familiar example will elucidate this.—Two ships, under equal circumstances, sail from Bombay, on a five months cruise off the Isle of France. One of them takes a valuable prize, while the other, with every effort and vigilance, is quite unsuccessful. The minds of the former crew are now perpetually employed in "building castles in the air," and forming the most extravagant anticipations of enjoyment on their return to port. This ship's company, without the aid of a single bottle of lime-juice, or pot of spruce, will come back to Bombay at the end of the cruise in health. Not so the other: chagrin, envy, (for, after all the *poetical* portraits that are drawn of our noble tars, they are both envious and jealous at times, like other folks) and various

depressing passions, shew themselves here, in the ugly shapes of scurvy, ulcers, and fluxes; so that, in spite of all the artificial checks from lemon-juice, sugar, porter, and even NOPAL itself, they are forced to Madagascar for refreshments, or else return with the other ship to Bombay, in a deplorable condition.

Here, however, the scene shifts again; for Hygeia is as fickle as Fortuna. The crew of the successful ship having shared their prize-money,

"Balnea—Vina—Venus,"

become the order of the day; and, for a short time, they are at the summit of human happiness! But in a few weeks, on *leaving* port, this ship's company will exhibit as long a list of fevers, dysenteries, and venereals, as the other did of scurvies, ulcers, and fluxes, on *arriving*. Thus prize-money, or rather the hope of prize-money, is one of the most potent antidotes to disease among sailors at sea, but the most certain bane of their health on shore.

To return. This mental despondency may be attributed partly to physical, and partly to moral causes. I have already hinted that derangement in the *hepatic* and *digestive*, very soon affect the *mental* functions; so, on the other hand, the depressing passions speedily derange the biliary secretion, digestion, and peristaltic motion of the intestines, consequently disposing the liver, stomach, and alimentary canal, to disease, as well as inducing general debility throughout the system. This sufficiently accounts for the phenomenon; but it is also to be considered, that grief and

disappointment must be *ceteris paribus*, more poignant in India than in England; since the loss of friends or relatives is more felt, in proportion to the small number we possess; and frustrated expectations will, of course, be more galling on account of the previous sanguine hopes which always accompany a foreign, and particularly an Indian speculation. We may therefore lay it down as an axiom, that in a tropical climate, the depressing passions above alluded to, operate more immediately on those organs which, under all circumstances, are the principal sufferers in the diseases of the country; viz. that they diminish the mental energies, or sensorial power, and impair the functions of the liver, stomach, and intestinal canal.

Within the torrid zone, philosophy seems to direct her influence, and reason its arguments, in vain, against these powerful disorders of the mind! Their frigid tenets are more efficacious beneath the gloomy skies of Europe. Religion, indeed, frequently asserts her superiority here, as well as elsewhere; and in conjunction with some pursuit or employment, mental or corporeal, will be found the best shield against the demon of despair, and, ultimately, the pangs of disease.

The destructive effects of intemperance, as a predisposing cause, are equally conspicuous, and I might say peculiar, in a tropical climate; for the injuries it occasions in Europe, great as they are, bear no proportion to those which we witness in the East or West Indies. Whether spirituous and vinous potations act as stimulants or sedatives, or both in succession, we need not stop to inquire, since the final result is universally allowed to be debility. From the temporary increase of excite-

ment in the system, and energy in the circulation, it is not impossible that the biliary secretion is for a short time augmented, and of course vitiated, by strong drink. This supposition is strengthened by the diarrhœa crapulosa which we frequently observe succeeding a debauch. But the great mischief seems to arise from the torpor communicated to the liver, through paralysis of its ducts, by which the secretion of healthy bile is not only greatly diminished in quantity, as well as obstructed, but deteriorated in quality; and hence the way is paved for fever, dysentery, and hepatitis.

The debility of the stomach, too, occasioned by the climate, is further increased by inebriety; and this atony is readily communicated to the liver, which bears the onus of disease in all hot climates.

The truth of these observations is amply exemplified among the crews of ships, when they have liberty to spend a few days at Calcutta, or go ashore, indeed, in any part of India, where intoxicating liquors are to be procured. During the indirect debility succeeding these debauches, the endemic of the country or port makes rapid strides among these deluded victims, converting what they erroneously conceived an indulgence, into the greatest evil that could have befallen them.

For obvious reasons, intemperance in eating is little less destructive than the other species; since an overloaded stomach, which has previously been weakened, will of itself excite a temporary fever, and consequently predispose to that of the country.

That fatigue, especially during the heat of the day, becomes an exciting cause of this fever, is well known to those who have observed its ef-

fects among the seamen employed in stowing the saltpetre, and loading or unloading the Company's ships at Diamond Harbour. Where those laborious occupations *must* be carried on by Europeans, they certainly should not take place between eleven o'clock and four in the afternoon; the interval ought to be dedicated to dinner, rest, and light work under the awnings.

A very common, and powerfully predisposing cause of this fever, has seldom been adverted to, though highly deserving of attention.—I mean those licentious indulgences which are but too easily procured, and too frequently practised on the banks of the Ganges, and in most other parts of India—I may say of all tropical climates! I have seen many melancholy instances of their pernicious effects; and therefore it is incumbent on commanding officers of ships, to keep as strict a curb as possible on the men, during the sickly season, and on no account whatever allow them to straggle through the villages, where inebriety, and that too from a very deleterious species of drink, is an inseparable accompaniment to the illicit amours abovementioned. In every region virtue is its own reward; but within the torrid zone, its breach is more signally punished than in any other.

The last exciting cause which I shall mention, is the influence of the sun and moon. However sceptical professional men in Europe may be, in regard to planetary influence in fevers, &c. it is too plainly perceptible between the tropics, to admit of a doubt. I have not only observed it in others, but felt it in my own person in India, when labouring under the effects of obstructed liver.

Sol-lunar Influence.

It is a certain fact, that if we attend minutely to the state of our own frames and sensations, two, if not three slight febrile paroxysms, may be detected in the course of each diurnal revolution of the earth, independent of those which succeed full meals. In high health we may not be able to distinguish more than the nocturnal paroxysm, which commences about seven or eight o'clock in the evening, and is not over till two in the morning. This is the cause of that furred tongue, which all may observe on getting out of bed, more or less, according to the degree of the paroxysm; and it likewise explains the evening exacerbation of fevers in general. But valetudinarians will feel, about mid-day, another slight febrile accession, similar to the preceding, except in degree; and in some instances a third, but still slighter one, is felt between eight and ten o'clock in the morning. In India I have felt the two former very distinctly, and particularly at full and change, when I used to be affected with tremor, a sense of weakness, and sometimes a dimness of vision about mid-day, succeeded by a certain quickness and irritability of pulse, which would continue for an hour or two. I was so well aware of this, that I made a point of keeping myself quiet, and as cool as possible, about the abovementioned period; since any exertion at that time, in the heat of the sun especially, increased the symptoms which I have described, in a very considerable degree. I believe this is the case with most people, more or less, and accounts for the general complaint of faintness about twelve o'clock in the day, and which is relieved by a glass of wine or other refreshment. I found the cold bath, where I could conveniently apply it, almost

entirely *prevent* this paroxysm, and hence the utility of bathing when the sun is at his greatest altitude. At those times too, my sleep was broken and disturbed with dreams, and a feverish heat towards midnight, all of which would go off about two o'clock in the morning. This accords with the general remark, that the morning repose is the soundest, and that if dreams do then occur, they are more distinct and better remembered than those which take place *during* the nocturnal paroxysm. It is very natural to attribute such regular and periodical changes or feelings in the human frame, to the revolutions of the planet we inhabit, and the influence of the sun and moon. That this influence predisposes to, or exacerbates the paroxysms of fever, in India and other tropical climates, is incontestibly proved by daily observation, as the publications of the ingenious and respectable Dr. Balfour evince. But when we find a modern physician * extend this influence not only to every species of disease in temperate climates, but to life, death, birth,—nay, even conception itself!—when we see him harrow up the dreams of the ancients, to give weight to the waking reveries of his own imagination, then, indeed, we may expect to have the whole theory turned into ridicule. Who, for instance, but Dr. Moseley, in turning over the pages of Aristotle and Pliny, would thus cruelly

"Draw forth their frailties from their dread abode.

and exhibit such passages as the following?

* Vide Moseley on Tropical Diseases, 4th edition.

" Aristotle observes, that *no animal dies* but at " the time of the *reflux or ebbing of the tide.* " It has, he says, been much remarked on the sea " coast of France, but found by experience to ex- " tend *only to the human race.*"* " Some cu- " rious investigators, says Pliny, *have discovered* " that the fibres or streaks in the livers of rats, " answer in number to the days of the moon's " age; and that the little creature, the ant, feels " the moon's influence, and never works at the " time of the change."† Aulus Gellius is likewise a *lunarian.* He remarks, " that those things " which increase with the moon, decrease with " her; that the eyes of cats are larger or smaller, " according to the moon; but that onions" [the only rebels in the vegetable world,] " put out " their buds in the *decrease* of the moon, and " wither in her *increase,*" [how perverse!] " con- " trary to the nature of *every other* vegetable pro- " duction." But poor Pliny is destined to put the cap to this climax of absurdities. " The moon, " says he, is *truly* conjectured to be a *spirit.* By " this she saturates the earth; in her increase she " replenishes bodies, and in her decrease empties " them again. *Therefore* all shellfish increase " with the moon, and those *animals which have no* " *blood most feel her force.* The blood in human " beings is augmented and lessened with her light. " She turns to corruption the slain carcasses of " wild beasts, if she shines upon them; she thaws " ice; and with her moistening breath enlarges " all things." . . Finally—" The moon is nourished

* Tropical Diseases, p. 577. † Ibid.

" by the fresh river waters, as the sun is fed by " the sea!" p. 577-8. These few passages, taken at random out of *twenty octavo pages*, filled with similar erudite quotations from the ancients, equally interesting and instructive, may well excite our astonishment, how any man, not actually in a state of *lunacy* himself, could wade through such a sea of learning, in search of crude errors, puerile fancies, and absurd suppositions, that would disgrace the most superstitious legend of monkish ignorance! This may teach us how useful an auxiliary to erudition is a modicum of common sense.

Of Dr. Moseley's own opinions, and those of post-barbarian physicians, occupying *fifty pages* more, I shall take little notice. They only prove to us, that this same *lunacy* is not confined to the ancients alone. Conception, for instance, an operation which we short-sighted terrestrials hitherto attributed to the *fixed laws* of Nature, appears, according to the lunarian account, to be regulated by the moon. But on this point Dr. Moseley archly insinuates, perhaps for wise purposes, that he has by no means unlocked *to us* the whole store of his *occult* knowledge; as is pretty evident from the significant innuendo conveyed in the following sentences, both prosaic and poetical: " Much " might be said here," continues the doctor, " if " *individuals*, and not Nature, who is never *desti-* " *tute of heirs*, were the theme of our *Treatise*.

> " There are more things in heaven and earth,
> " Than are dreamt of in our philosophy."—p. 634.

Now if this hint be not sufficient to excite the attention of sexagenarian Lotharios, who are anxious to perpetuate their names by legitimate

offspring, I know not what will. Certain females too, of unpromising fecundity, who have long tried all means of getting into that happy state, in which

"Ladies wish to be, who love their lords,"

come under the head of these *heirless individuals*, above alluded to; and since the *Treatise* is not the proper place to unfold secrets, we may naturally conclude that CHELSEA is the astrological dispensary for distributing and directing this planetary influence to certain important *ends and operations*, far beyond the control of any but initiated lunarians.

THEORY OF FEVER.

After having detailed, pretty fully, the remote and predisposing causes, the symptoms, and the modes of treating this endemic, all which may come under the head of "Practical Facts," I might fairly claim the indulgence of a few pages for theory. But conscious how unprofitable, however prolific, are, in general, the flowery fields of speculation, and knowing what ample and useful materials remain for arrangement within the narrow limits which I have prescribed to this Essay, I shall pass with hasty steps through this fairy region; or, like Ulysses, binding myself to the mast of observation, to avoid as much as possible the syren voice of theory, confine my efforts to an attempt at explaining the more prominent features of the "Ratio symptomatum" in this fever; aware that, although the undertaking may be deemed presumptuous, the failure, for obvious reasons, cannot be considered disgraceful.

First then, we need not be ashamed, however unfashionable it is, to conclude with the immortal Cullen, that the remote cause of this fever, as well as that from contagion, is a sedative. That its application or reception diminishes the sensorial energy. That the power of the heart and arteries is first weakened, the consequence of which is, an inability to propel the blood to

the surface; hence the quiescence of the capillaries, the shrinking and coldness of the external parts, *without the intervention of spasm.* In this state it follows of course, and is allowed by all, that the blood is confined to the heart and large internal trunks of vessels. But this does not appear sufficient to account for the swelling, tension, oppression, and even pain about the hypochondria, as well as many other of the symptoms attendant on the cold stage in particular. If, during the latter, I place my finger on the radial artery, and endeavour to estimate its calibre, and the quantum of blood transmitted through it in a given time, compared with what takes place in the hot stage, or even in health, I shall conclude that the artery is not then above one-third the size, nor the quantity of blood passing through it more in proportion. Such being the case, it is difficult to conceive how the whole mass of blood can be in *actual circulation* at this time. In addition, therefore, to the confinement of a large share of it to the heart and great vessels, where its motion must be slow, I suppose another considerable portion of it to be *arrested*, as it were, and accumulated in certain situations, where it remains, pro tempore, *out of the course of the circulation.* This congestion, or complete quiescence, takes place in the *portal circle*, where the blood is at all times languid in its current, there being no *vis a tergo*, and but little muscular propulsion. The consequence of this must be, that not only the liver and the various branches of the vena portarium will become turgid, but also the spleen, [which returns its blood to the heart through this

channel] the stomach, pancreas, and intestines, will feel the effects of this turgescence. If it be asked, why the blood should cease to circulate in these parts sooner than in others? I answer, that the portal is the only circle or set of vessels in the sanguiferous system, *originating and terminating* in capillary tubes, or inosculations with other vessels. They begin by the minutest threads from the stomach, spleen, pancreas, and intestines; enlarge as they approach the liver, where they diverge, and finally dwindle again into the same diminutive size with which they commenced. All other veins dilate as they approximate to the heart, affording more and more facility to the return of the blood, which is in most places assisted by the action of circumjacent muscles. The temporary quiescence or torpor, then, of the extreme branches of the vena portæ in the liver, from sympathy with the extreme vessels on the surface, [before alluded to] must completely check and arrest the reflux of blood from the whole of the viscera abovementioned. This state of things at once explains the tension, elevation, pain, weight, and anxiety about the præcordia. It shews why the biliary and pancreatic secretions are entirely suppressed for the time, while the gradual accumulation and temporary abstraction, as it were, of so great a proportion of the vital fluid from the circulation, will readily account for most, if not all the phenomena of the cold stage, many of which were before inexplicable.*

* It appears to me that this temporary arrest of so much blood in the liver and portal circle, (including the spleen) is

But this accumulation of blood in the portal circle and viscera, must of necessity produce a corresponding plethora in the various branches of the cœliac and mesenteric arteries, leading to them; and since such large and important exits for the blood from the descending aorta, are, as it were, blocked up, a greater share of the circulating mass will be thus thrown through the carotids and vertebrals on the brain, occasioning or increasing the head-ache and congestion in that organ. This, and the congestion in the lungs, however, will be principally caused by the difficulty or inability of the heart to propel the blood from the ventricles as fast as it returns to the auricles, from the brain and lungs; hence the venous turgescence in both those organs, occasioning the head-ache, stupor, laborious respiration, and febrile anxiety, attendant on the collapse or cold stage.

The effects of sympathy are likewise to be taken into consideration. I have mentioned that which subsists between the extreme vessels on the surface, and those of the vena portæ;—the lungs too will sympathize with the skin,

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one of the most admirable of Nature's expedients to obviate more dangerous effects. When the balance of the circulation is broken, and the blood is determined from the surface upon the internal parts, were it all to accumulate in the large vessels about the heart and in the lungs, immediate death would be the consequence; but the local abstraction of so large a portion of it from *actual circulation*, by its quiescence in the circle abovementioned, [where plethora is not so immediately detrimental] preserves the heart and lungs from being overpowered and suffocated, till reaction restores the equilibrium between the surface and the interior.

while the stomach and liver will sympathize with the brain, and vice versa.

This state of things, however, lasts not long; re-action at length takes place. Whether it be from the "stimulus of the blood itself,"—from that of "the retained secretions,"* from "accumulated irritability,"† from the vis medicatrix naturæ, or from all combined, we need not stop to inquire; but so it is, that the heart and arteries re-acquire vigour, and drive the blood to the surface, with great increase of heat, and a more rapid circulation of the vital fluid; all of which, nevertheless, does not appear to come into motion till the sweating stage. For this preternatural heat seems to have the same effect, for a time, as the previous coldness, in preventing perspiration externally, and secretion internally; since we find the load and uneasiness at the præcordia continue till the surface relaxes and a sweat breaks out, when a simultaneous relaxation in the extreme vessels of the vena portæ allows the blood to pass on freely to the heart, and the *biliary secretion to flow*, relieving the abdominal congestions. This last effect, so much accelerated by the cold affusion in the hot stage of fever, and so extremely beneficial, seems to have escaped the observation of Currie and Clutterbuck.

As the head-ache of the cold stage, from venous plethora, is continued in the hot, from arterial distension, [with a corresponding difference in sensation] so the nausea and sickness at stomach, arising apparently in the cold fit,

* Wilson. † Brown and Darwin.

from sympathy with the brain and liver—perhaps the skin, is continued in the hot, from the same causes; and the vomiting [in tropical climates particularly] afterwards greatly augmented, and rendered dangerous, by the deluge of vitiated bile poured into the duodenum, on the recommencement of secretion, occasioning the most distressing symptoms, and in many instances inflaming the coats of the stomach and intestines.

If, as some suppose, the cold be the cause of the succeeding hot stage, so the violence of the re-action, or rather over-action, of the sanguiferous system in the latter, must predispose to a repetition of the fits, from the subsequent atony produced thereby. If there be sensorial energy enough to enable the heart and arteries to clear the viscera and brain of the load of blood with which they were oppressed, and to set the secreting organs in action, then an *intermission* takes place; but if these circumstances be incomplete, a *remission* only. In what is called continued fever, it appears from the affection of the head, the load on the præcordia, the confined pulse, the dry, hot, and constricted skin, with a corresponding diminished biliary secretion and costive bowels, that the constitution is called upon for almost constant, or at least, frequently reiterated exertions, to relieve the internal congestions, and restore the secretions and excretions, marked by the diurnal remissions and exacerbations, till it either becomes habituated to the original cause, and restores the balance of the circulation, or sinks unequal to the task, frequently with the destruction, from inflammation, or suffocation, as it were, of an organ essential to life. Dissection having detected

the actual existence of such congestions and inflammations, I shall adduce a very few quotations from the most respectable authorities, in proof thereof.

Riverius makes use of these remarkable expressions respecting fevers.—" Rarissime fieri sine " interna, et peculiari visceris cujusdam affec- " tione, et plerumque inflammatione. Quare nun- " quam omittenda cura *hypochondriorum*, capitis, " thoracis, &c." [Praxis Medica.] Dr. Jackson, who had ample opportunities of examining the effects of fever at St. Domingo, observes, " When " the fever is rapid in its course, the spongy organs—the liver and lungs—are sometimes, as it " were, suffocated or oppressed: the lungs are " like a bag, filled with grumous blood; the liver " and spleen are filled with *black blood*, in such a " manner that their coverings are sometimes rup- " tured. In the *more protracted cases, the venous* " *system is turgid, as if filled with injection.*" Outlines of Fever, p. 208. " Perhaps," says Dr. Rush, " the stimulus of contagion determines the " fluids more violently, in most cases, to the liver, " stomach, and bowels, and thereby disposes them " more than other parts to inflammation. There " can be no doubt of the contagion acting *speci-* " *fically upon the liver*, and thereby altering the " qualities of the bile." On Yellow Fever, page 114. " In hot climates," says Dr. Moseley, " a " sound liver is never to be expected after death, " whether the disease has been acute or chronical." If these post-mortem facts be connected with the preceding reasoning, I think there will be little doubt left in the mind, that in all fevers, of tropical climates particularly, *congestion* takes place

in one or more of the organs alluded to; and that frequently inflammation and derangement of structure are the consequences.

If this be the case, then, we see the difficult task which Dr. Clutterbuck has imposed on himself, in assigning

"A local habitation and a name" *

to fever; since the seat of the injury will depend on *previous debility* of the organs in question, produced by climate, habits of life, and a variety of accidental circumstances.

Thus, in tropical climates, the hepatic system being weakened or deranged, *anterior* to the accession of fever, it is evident that it must suffer more considerably in each paroxysm, from the congestion during the cold fit, while the stomach and intestines suffer from the diseased secretions of the liver, in the violence of the re-action.

We thus see how bold venesection in the beginning, and active purging, have been so successful in relieving the congestion, and exciting the healthy secretions of the portal circle and liver, and how this relief is immediately extended to the head and lungs; while the cold affusion, moderating the excessive action, removing the irritation of morbid heat, cutting short the hot fit, by bringing on perspiration and biliary secretion, must be a most valuable remedy, inasmuch as it reduces the fever, as it were, from a continued to an *intermitting* form. It is in this state that bark, where no visceral derangement has yet taken place, by

* Dr. C.'s motto.

imparting a temporary tone to the stomach, and, by sympathy, to the brain and liver, will often prevent the recurrence of the paroxysm; but, from experience as well as theory, it must do harm during the cold, hot, or sweating stages; since the attempt to constringe *over-distended* fibres or vessels invariably increases the mischief.

But there is a medicine calculated, in itself, to fulfil all the principal indications abovementioned, in an eminent degree;—namely, while it proves a steady and permanent stimulus to the whole sanguiferous system, it powerfully promotes the biliary and other secretions, clears the intestinal canal of all offensive colluvies, removes the abdominal, and ultimately the other congestions alluded to, and keeps up a gentle diapnoe, or mild perspiration, on the surface of the body, during the period of its exhibition, and for some time afterwards. This medicine is MERCURY; and common observation proves, that it will produce any or all of these effects, when properly managed.

For instance, if given for a few hours, in conjunction with opium, at the commencement of fever, and after a copious venesection, it allays the irritability of the stomach, and relaxes the hepatic ducts, which seem at this time to be constricted, partly from sympathy with the extreme vessels of the portæ and on the surface, and partly from the irritation of diseased secretions. If it is then combined with a purgative, an immense alvine discharge is procured, relieving, in an admirable manner, the congestions of the liver, spleen, stomach, and the whole of the cœliac, mesenteric, and portal vessels, as well as those of the head. If it be then taken in sufficient doses, with opium

occasionally, to prevent its running off, till ptyalism is brought on, the effects before mentioned, viz. restored balance of the circulation, &c. will be produced, taking care, however, to substitute cathartics at proper times for the opium, in order that alvine evacuations may be kept free.

So much for theory. We now return to practical observations.

The difference between this and the yellow fever of the west has been always noticed, but, in my opinion, never adequately accounted for; and the investigation of this discordance is certainly interesting, since the same general causes, both remote and predisposing, are allowed to operate equally, or nearly so, in both hemispheres. First, then, let me observe, that the average space which a ship traverses, between Spithead and the Ganges, is 14,000 miles. Secondly, that in this voyage we run twice through the tropics; first from Cancer to Capricorn, and afterwards from Capricorn back to Cancer again; besides a great deal of oblique sailing in the vicinity of the southern tropic. During the period of time necessary for this performance, the human frame has the best possible means of accommodating itself to the change of climate; viz. a more steady range of temperature, and of a lower degree, than that of the ultimate destination; together with an atmosphere untainted by any noxious exhalation. In addition to these, the regular hours imposed on all classes, in ships proceeding eastward, the consequent habits of temperance acquired, and lastly, the paucity of luxuries which pretty generally attends a protracted voyage, especially the last weeks, sometimes months of it, all combine to

lower the tone of the constitution, and impart to it a considerable degree of assimilation, before the period of danger arrives. Thus the stomach and bowels will become somewhat accustomed to the increased secretion of bile, and even this last will be less profuse, as we are more inured to the high ranges of temperature, following the same laws, and sympathising with the perspiration.

Let us contrast this with a transatlantic voyage. The European, "full of flesh and blood," [to use a vulgar, but not inapplicable expression] embarks for the West Indies, in a transport or other vessel, where regularity and order are by no means conspicuous.* As he is under little control, and generally supplies a great proportion of his own fare, he endeavours to guard against any deficiency in that important point: in short, good English viands smoke daily on the festive board, while sufficient potation—"to keep the pores open," is steadily applied; till, after a few weeks run, he is launched at once into a tropical climate, and immediately landed, "with all his imperfections on his head." It is true that, when ashore, the facility of procuring the "*diffusible stimuli*" need not be much insisted on, since, unfortunately, the *arrack* of the east is equally easy of access to the men, as the *rum* of the west. But unquestionably the bad effects will be greater in the latter case, for the reasons adduced above.

With respect to officers, and other genteel classes of society, on landing in the western world, they are destitute of many powerful shields which

* I allude principally to troops.

are pretty generally interposed between Europeans of the East and the burning climate. In the former case, we may look in vain for the palankeen, the budgerow, the punka, the tatty, and the light, elegant, and cool vestments of India, together with the numerous retinue of domestics, anticipating every wish, and performing every office, that may save the exertion of their employers. The untravelled cynic may designate these luxuries by the contemptuous epithet of "Asiatic effeminacy;" but the medical philosopher will be disposed to regard them as rational enjoyments, or rather as salutary precautions, rendered necessary by the great difference between a temperate and torrid zone. Nor are these *dulcia vitæ* the exclusive property of the higher classes in India. The European soldier is permitted to inter-marry with the native Hindostannee nymph; and, whether married or not, he has generally a domiciliated *chere amie*, who cooks, washes, and performs every menial drudgery for *massa*, in health, besides becoming an invaluable nurse when he is overtaken by sickness.

Under the privation of these advantages, can we wonder at the effects, which exposure to all those causes, described as operating in Bengal, must produce on the full, plethoric habit of an Englishman, only four or five weeks from his native skies, before he debarks on the burning shores, or insalubrious swamps and vallies of our western colonies.

The more prominent distinctive features of the transatlantic fever, yellow skin and black vomit, [though by the bye they are frequently *absent* in this, and *present* in the eastern fever,] may

I think be attributed to the more violent action in the hepatic system, and superabundant secretion of *vitiated* bile, which, by the ceaseless vomiting, is thrown out in deluges on the duodenum and stomach, deranging their structure while regurgitation into the blood suffuses the skin. "On the first and second days of the disorder," says Dr. Rush, "many patients puked "from half a pint to nearly a quart, of green or "yellow bile. Four cases came under my notice, "in which black bile was discharged on the *first* "day. Three of these cases recovered. I ascribed "their recovery to the bile not having yet acquired "acrimony enough *to inflame or corrode the sto-* "*mach.* There was frequently, on the fourth or "fifth day, a discharge of matter from the sto- "mach, like the grounds of coffee. I believed it "first to be a modification of *vitiated bile,* but I "was led afterwards to *suspect* that it was pro- "duced by a *morbid secretion in the liver,* and "effused from it into the stomach."——"That "the bile may become extremely acrid in this stage "of the disorder, is evident from several obser- "vations and experiments. Dr. Physick's hand "was *inflamed* in consequence of its being *wetted* "by bile in this state, in dissecting a body." p. 54. "I am not certain that the black mat- "ter which was discharged in the *last stage* of the "disorder was *always* vitiated or acrid bile. It "was probably, in *some cases,* the matter which "was formed in consequence of the mortification "of the stomach." p. 55.

In respect to the yellow colour, Dr. Rush is fully convinced that it is attributable to bile. "From these facts it is evident," says he, "that

" the yellowness, *in all cases*, was the effect of an " absorption and mixture of the bile with the " blood." p. 70.—Vide Hunter and Bancroft.

It is not meant to infer from hence, that the febrific miasms are exactly the same in the East and in the West: experience proves the contrary, as will be shewn in Section 4. (Vide Batavian Endemic.) I only mean to say, that the expression of their effects, on the biliary organs in particular, may be considerably modified by the circumstances above detailed. Neither do I suppose that in the last stages of black vomit, the matter ejected is bilious; but I am confident that the gastric derangement is in a great measure occasioned by the deluges of acrid, vitiated bile, poured from the liver on the stomach, during the vomiting in the early stages of the disease.* Hence, to check the gastric irritability early, is a most desirable object.

The stomachs of newly arrived Europeans in the West will, for the reasons detailed above, be much more liable also to take on inflammatory action. This, and the more violent orgasm in the hepatic system, appear to be the principal distinctive features in which the fevers of the two hemispheres differ; and are, I think, referible to the aforesaid causes.

* The above observations are confirmed by the dissections of Dr. Ramsay, at Bellevue Hospital, in 1803. (Vide Edinb. Med. and Surg. Jour. No. xxxii, page 423.) He traced, in numerous instances, the *black vomit* to the gall-bladder and hepatic ducts; and to this acrid discharge he attributes, in a great degree, the derangement in the stomach and bowels, which gives rise to the *bloody vomit* subsequently.

Contagion.

A practical point of much importance remains to be noticed; namely, whether or not the fevers in question are contagious.

It is lamentable to observe the discordance of medical opinions on a question that, at first sight, might seem so easily determined. Thus,

Clarke, Lind, Balfour, Chisholme, and Blane, are positive in the affirmative. While, on the other hand,—

Hunter, Jackson, Moseley, Miller, and Bancroft, are as decided in the negative!

Yet here, as in most other instances, truth lies between the extremes. As far as my own observations and judgment could guide me, I have been led to conclude, that the endemic fevers alluded to are *not* contagious, till a certain number of patients are confined together, under peculiar circumstances, when the effluvia *may* render them so. If, for instance, a man is seized with fever, from greater predisposition, or from greater exposure to the causes enumerated, than his companions, he will not communicate the disease to another, who may sleep even in the same chamber, where common cleanliness is observed. But on the other hand, if great numbers are attacked, nearly at the same time, and confined in the sick-berth of a ship, or ill ventilated apartments, in hammocks, cots, or filthy beds, it is possible that a contagious atmosphere may be formed, [without an attention to cleanliness and ventilation scarcely compatible, or at least hardly to be expected, in such situations,] which spreads a disease, *wearing the livery of the prevailing endemic*, but having a dangerous character superadded, namely, the power of reproducing itself in other subjects, both

independent of, and in conjunction with, the original endemial causes.* This circumstance reconciles the jarring evidences which have long kept the public opinion in suspense. It has been urged, that we ought to err on the safe side, by considering it contagious, and guarding accordingly by early separation. But this plan is not without its disadvantages, and, if I am not greatly mistaken, I have seen it produce what it was meant to prevent; viz. by confining all who had any symptoms of the fever in one place; where, as on board a ship in a tropical, or any climate, it is exceedingly difficult, if not impossible, to prevent the generation of an infectious atmosphere, and the impregnation of bed-clothes, &c. with the effluvia from the diseased secretions and excretions of the patients. On the other hand, I have seen both sides of the main deck nearly filled with fevers of the country, where screens and other means of separation could not be obtained, or rather, were not insisted on, and yet no bad effects followed; while under similar circumstances, where there were fewer sick, and all imaginable pains taken to insulate them, attendants have been seized, and other symptoms, indicative of contagion and virulence, have arisen, which, while they seemed fully to justify the precautions used, were probably owing to them alone. These hints may not be entirely unworthy of attention, inasmuch as they shew us how easily we may be deceived, and how positive we may be in our errors. They likewise shew that free ventilation and clean-

* Vide the two next sections.

liness may in general be confided in, between the tropics, where seclusion is inconvenient or impracticable; and that *separation of the sick from one another*, as far as possible, is a duty not less incumbent, than that of cutting off the communication between them and the healthy. There is this advantage attending the former, that alarm is in a great measure hushed, and the depressing passion of fear so far obviated.

Before taking leave of this fever, it will be necessary to say a few words respecting

INTERMITTENTS.

In those parts of India and China bordering on the Nothern tropic, when the Sun is in Capricorn, and the cool season sets in, viz. from the middle of November till the middle or latter end of February, fevers change from the remittent to the intermittent form. Thus at Bombay, Calcutta, and Canton, particularly the last-mentioned place, we have ample specimens during the above period, of agues and fluxes. From the Bocca tigris up to Canton, the river is flanked with extensive paddy grounds intersected and watered in all directions by the minor branches of the Taa and artificial canals. The surrounding country, however, is singularly mountainous; and at this season, has a dreary, wild, and bleak appearance. From these mountains the north-east monsoon comes down with a piercing coldness, which the Europeans, relaxed and debilitated by the previous heats, or their

Intermittents.

sojourn on the sultry coasts of Hindostan, are quite unable to resist. As the improvident mariner has seldom any European clothing in reserve, adapted to this unexpected exigency, especially if he has been any time in India, we need not wonder that in such circumstances, a great number should be afflicted with intermittents and dysenteries at this season. For many weeks, we had seldom fewer than thirty or forty, often more, at one time, laid up with these complaints: they were generally tertians with a few quartians. The apyrexia was tolerably clear, and the bark exhibited in the usual way recommended for similar fevers in Europe, was a certain and expeditious cure, where no visceral obstructions existed. In the latter case, which was but too frequent, mercury, of course, was an essential auxiliary. It is proper to remark that in two ships of war lying at the bocca tigris, [The Grampus and Caroline] the bark was entirely expended on the great number of intermittents. In this dilemma we had no other resource than mercury; and this medicine invariably stopt the paroxysms as soon as the system was saturated; but it must not be concealed, that three-fourths of our patients, treated on this plan, relapsed as soon as the effects of the mercury had worn off, and this after three, and in a few instances, four successive administrations, so as to excite ptyalism. I attributed these failures to the coldness and rawness of the air, together with the want of proper clothing and defence against this sudden transition from a hot to a comparatively cold climate; very unfavourable circumstances in the mercurial treatment. No ill effects, however, resulted.

In the month of October the weather was so warm, and the nights so cloudless and serene, with very little dew, that many of us slept in the open air at Lintin, an island about twenty-five miles above Macao, where we had tents ashore for the sick and convalescents, as well as the different working parties.

But in November the nights became exceedingly cold; and although there was hardly any thing that could be called a swamp or marsh on the island, yet intermittents and fluxes made their appearance, and continued to increase during our stay, without any very apparent cause, except this sudden vicissitude in the temperature of the air.

There was indeed a very high peak in the centre of the island, the sides of which were covered with thick grass-jungle, and over this the winds blew towards the ship and tents. There can be no doubt that hills and mountains arrest the course of marsh miasmata through the air, and when a sufficient quantum of these is collected, they will produce their effects on the human frame, in a similar manner, as if issuing from their original source; especially when the predisposing causes are in great force. Hence we see how miasmal fevers may take place on the summit of *Morne fortune*, or the rock of *Gibraltar*, without any necessity for the supposition that the febrific exhalation arose from those places themselves.

We next moved up to the Boca tigris, and got into the vicinity of extensive marshy and paddy grounds, which contributed greatly to the augmentation of the sick list.

It is somewhat curious, that a frigate [the

Dedaigneuse] belonging to the squadron, which lay in the typa, near the city of Macao, remained perfectly healthy, while we were so afflicted with the diseases abovementioned. As the crew of this ship was exposed to all the causes, *predisposing and exciting,* which could exist farther up the river, it follows, that marsh exhalation must have been here, as elsewhere, the fundamental *remote cause,* that gave origin to the intermittents. At Wampoa, sickness was still more predominant among the Indiamen, than at the Bogue—not so much from any great difference in the medical topography of the two places, as from the vicinity of the former to Canton, to which city parties of the last-mentioned ships' crews were in the habit of repairing on leave, to the no small detriment of their health, from the course of intemperance pretty generally pursued. The great intercourse, likewise, between Wampoa and Canton afforded infinite facility to the introduction of inebriating materials among those who remained on board. The liquor retailed to seamen in China is certainly of a very destructive nature. Its effects have attracted so much attention, that when His Majesty's ships are leaving the coasts of India for China, there is generally an order received from the admiral, enjoining the officers to guard as much as possible against the introduction of "SAMSOO" among the crews, which, says the order, "is found to be poison to the human frame."—It were a consummation devoutly to be wished, could this injunction be extended to the arrac of India, from which the samsoo only differs in being more impregnated with certain stimulating materials, prejudicial to the stomach and bowels.

The ordinary mode of preparing Samsoo is as follows:—

"The rice is kept in hot water till the grains are swollen; it is then mixed up with water, in which has been dissolved a preparation called '*Pe-ka*,' consisting of rice-flour, liquorice-root, anniseed, and garlic. This hastens fermentation, and imparts to the liquor a peculiar flavour." It is probable, however, that other more active ingredients are added to that in use among the lower classes at Canton. Bontius, speaking of the dysentery at Batavia, alleges, as "the principal cause of this disease, the drinking an inflammatory liquor called *arrac*, which "the *Chinese* make of rice, and the *holothuria*, "or what is called quabbin in Holland. These "holothuria have so *pungent* a heat, that the "touch of them *ulcerates* the skin and raises "vesicles." p. 16. He adds a pathetic remark. "Happy were it for our sailors, that they drank "more moderately of this liquor; the plains of "India would not then be protuberant with the "innumerable graves of the dead!"

The same remark might be with strict propriety applied to the arrac of India in general, where, as at Bombay for instance, its pernicious effects are equally conspicuous as at Batavia.

It may at first sight appear singular, that mountainous countries covered with lofty woods, or thick jungles, should give rise to fevers, similar in every respect to those of flat and marshy districts. But the reason is obvious, when we consider that in the first-mentioned situations the surface of the earth is constantly strewed, particularly in autumn, with vegeto-

animal remains, and kept in a moist state by the rains, or drippings of dews from the superincumbent foliage. The stratum of atmosphere, therefore, in contact with the ground, becomes highly impregnated with effluvia, which are seldom agitated by breezes, or rarefied by the rays of the sun; either of which would tend to dissipate the exhalations.

Thus, among the lofty forests and impenetrable jungles of Ceylon, the most powerful miasmata are engendered, producing fevers of great violence and danger. "It is under the "branches of these shrubs," [in Ceylon] says Lord Valentia, "that the fatal jungle fever is "probably generated. Not a breath of air can "pass through; and the confined exhalations "from the black vegetable mud, loaded with "putrid effluvia of all kinds, must acquire a "highly deleterious quality, affecting both the "air and the water." Travels, vol. 2.

Generally speaking, however, these hill, or jungle fevers, as they are locally designated, appear in the form of intermittents, especially among the natives, and those Europeans whose constitutions are assimilated to the climate. Unfortunately, among the latter class these fevers either soon produce, or are accompanied by, visceral obstructions, too frequently terminating in confirmed hepatitis; hence the necessity of checking them as soon as possible, and of using all imaginable precaution in guarding against the remote and predisposing causes. The treatment, of course, must vary, from a simple administration of bark, to its combination with mercury, or the exhibition of the latter

alone, so as to keep up a gentle ptyalism for some considerable time. In these elevated situations, far from seas, or even rivers, and entirely out of the reach of tides, the influence of the moon is unequivocally evinced.

"It is by no means uncommon," says Captain Williamson, "to see persons, especially "Europeans, who have to appearance been "cured of jungle or hill fevers, as they are "called, and which correspond exactly with our "marsh fever, laid up at either the full or "change of the moon, or possibly at both, for "years after." This from a non-professional gentleman, is another proof of the sandy foundation on which Dr. Lind's hypothesis, before alluded to, rests; and of the truth of Dr. Balfour's observations.

BILIOUS FEVER.

Sec. II. This is the grand endemic, or rather epidemic (morbus regionalis) of hot climates; and although greatly allied in many of its symptoms, perhaps generally combined, with the Marsh Remittent, already described, yet occurs in various places, both at sea and on shore, where paludal effluvia cannot be suspected.

Notwithstanding that this fever is hardly ever mistaken, by the least experienced practitioner, yet so extremely diversified are its features, by peculiarity of constitution, climate, season, and modes of life, that it is very difficult to give even a general outline of it, without involving apparent contradictions.

There are always, however, some prominent symptoms which sufficiently characterise Bilious Fever, for every practical purpose, which is the chief object in view.

These are, gastric irritability—affection of the præcordia,*—and affection of the head. Rarely will all, or any of these be absent. The other items in the febrile train are by no means constant and regular. Thus the pulse is frequently

* In the term præcordia I always include those viscera and parts immediately below the diaphragm;—the liver, stomach, and spleen, for instance, in the sense of Fernelius, lib. iv. De Febribus.

regular, and sometimes up to 120 or 130 in the minute. It is the same with the temperature of the skin. Often, when mad delirium is present, the pulse will be 86, and the thermometer in the axilla at 96° of Fahrenheit. The bowels are almost always constipated, or in a state of dysenteric irritation. No such thing as natural stools in this fever are ever to be seen, unless procured by art. Frequently, but not always, yellowness of the eyes, and even of the skin, takes place; and the mental functions are very generally affected, which indeed is characteristic of all bilious diseases. This fever is not near so dangerous as the more concentrated marsh endemics, such as those of Bengal, Batavia, &c. &c. Indeed I have long thought that these last are the bilious remittents of the country, modified and greatly aggravated by the peculiar nature of the local miasmata. However, that they occasionally exist independently of each other, I have likewise no doubt; for we must not let the rage for generalising blind us to facts.*

With respect to the treatment, I have never

* My meaning is this; that the fever in question frequently arises from atmospheric heat, or rather atmospheric vicissitudes, deranging the functions of important organs; and that it is, as Dr. M'Gregor supposes, symptomatic of local affection. Where marsh miasma is added, which is generally the case, then we have the endemic of the place, modified by the peculiar nature of the effluvia, and from which we are not secured but by local habituation to the cause. Residence, therefore, on the banks of the Ganges, is no protection from the miasma of St. Domingo, or Batavia, as will be proved in the 4th section.

found it difficult, when the means which I have minutely detailed under the head of Bengal endemic, were early and steadily applied. Bleeding, I know, is seldom employed; but I can state that three other surgeons on the station, besides myself, had recourse to venesection in the fevers of India, with the greatest benefit. These were, Mr. Dalziel, late of the Naval Hospital at Madras; Mr. Cunningham of the Sceptre; and Mr. Neill, formerly of the Victor, latterly of the Sceptre. This is a small band opposed to the host of anti-phlebotomists; but it must be remembered, that the evidence in favour of bleeding is, from its very nature, more conclusive than that which is against it. In the first place, a great proportion of practitioners will be deterred from the use of the lancet entirely, by the current of prejudice. In the second place, a great many of those who do venture on it, will be easily discouraged by any reverse at the beginning, which is sure to be attributed to the heterodox remedy; a striking instance of which will be given hereafter, in the section on "Endemic of Batavia." But on the other hand, those who persevere must be more than mad, if they continue a practice which is not beneficial; and if it is, how must their proofs accumulate! and how solid and experimental must be their nature, compared with those on the opposite side of the question, where prejudice and timidity are so apt to mislead!

I have to remark, however, that if the *other means* which I have recommended be steadily and judiciously applied, the neglect of the lancet

may not, in general, be attended here with much risk; though of this I have my doubts. For if life be preserved without venesection, are we sure that the *sequelæ* are not more numerous in such cases? Finally, my opinion is this:—that when we wish to arrest the progress of bilious fever, "*cito, tute, et jucunde,*" we should in all cases, where the constitution is not broken down by climate, and particularly where determinations to the brain or liver are conspicuous, as they too often are, take one copious bleeding at the beginning, (the repetition must be guided by the judgment of the practitioner,) which will very effectually promote the operation of all the succeeding remedial measures, and obviate in a great degree those visceral obstructions and derangements, which this fever so frequently entails on the patient.

The following condensed, but clear account of this fever, as it exhibited itself, in all its shapes and bearings, and with no small degree of violence, on the great mass of a ship's company, will convey a better idea of the disease, and in a more practical way, than any general description, however laboured, or however minute.

I have only to premise, that the symptoms were carefully noted, and the practice detailed on the spot, by a gentleman of no mean talent for observation; and although I differ from him on the *exhibition* of emetics, and the *omission* of venesection, it is with regret, as I entertain the highest respect for his abilities and candour. It will be seen that, in most other points, his prac-

tice is nearly similar to what I found most successful in the Endemic of Bengal.

" On the 2d March, 1804, His Majesty's ship Centurion dropped anchor in Bombay Harbour, on her return from Surat; at which time the ship's company were in good health. During the next week, the weather was variable—hot and sultry, in general, through the day, alternated with cold damp chills at night, when the dews were heavy, and the land winds keen from the adjacent mountainous coast.

On the 9th of the same month, several men complained of slight indisposition, which we did not consider of any importance, little aware of the distressing scene to which this was an immediate prelude.

Centurion, Bombay Harbour,
March 10th, 1804.

Eighteen men complained to me this morning, of having been taken suddenly ill in the night. Their general symptoms were—severe pain in the head, arms, loins, and lower extremities; stricture across the breast, with great pain under the scrobiculus cordis; retching and griping. In some the pulse intermitted, and the temperature of the skin was increased; others had cold chills, with partial clammy sweats; but all complained of pain under the frontal bone; many of them with white furred tongues, and thirst. A solution of salts and emetic tartar, designed to operate both ways,

was prescribed, with plenty of warm diluent drinks. P. M. The solution operated well, both upwards and downwards, in all the patients. Many complain now of pain in the epigastric region and head, with burning hot skins. Gave them Pulv. Antim. grs. vj, Tinct. Opii, gt. xx, Aq. Menth. ʒij; hora somni sumend. with warm rice water, slightly acidulated, for drink during the night. The patients to be secured from the land-winds, which at this season of the year are considered very pernicious. Almost all these men had been exposed to the intense heat of the sun by day, and to the influence of the night air, while lying about the decks in their watches. Mr. Brown, the carpenter, was on shore in the heat of the sun to-day, and attacked this afternoon with the fever.

Bombay Harbour,
March 11*th*, 1804.

Nine patients added to the list this day. The bilious fever set in with nearly the same symptoms as yesterday, and the same mode of treatment was pursued.

Many of yesterday's patients are very poorly this morning; complaining of severe pain in the head, limbs, loins, and across the epigastric region; with constant vomiting of viscid bile. Prescribed from five to ten grains of calomel, with small doses of antimonial powder, and tincture of opium, to be taken three or four times a day.

There is little intermission of pulse to-day. In some the skin is cold; in others hot, with

insatiable thirst. Tongue, in most cases, covered with a thick white crust. Great irritability of the stomach, and aversion to food. Bowels rather constipated—some have a fœtid bilious purging. P. M. The calomel appears to allay the irritability of the stomach; while the antimonial powder and tincture of opium keep up a warm moisture on the skin,

Bombay, 12th March.

Ten added to the list this morning, with bilious fever. The symptoms and treatment nearly as before. Some of the patients of the 10th are better to-day, the irritability of the stomach being a good deal allayed by the calomel and opium; but they still complain of pain in the head and limbs, with great debility. Eyes heavy, and tinged yellow—pulse full—bowels constipated. Prescribed a dose of Natron Vitriolat. after the operation of which, the calomel, &c. to be continued as before.

The emetic-cathartic solution operated well with the nine patients of yesterday (11th); most of them are very ill this morning. They have incessant vomiting of green thick bile, with pain in the epigastric region and head—thirst insatiable. Prescribed the calomel, opium, and antimonial powder, as in the other cases. No delirium has yet appeared in any of the patients; nor much alteration from health in the pulse. In many, the temperature of the skin very little, if at all increased; constipation of the bowels nearly a general symptom.

The decks are now crowded with sickness.

Bilious Fever.

Bombay, 13th March.

Eight added to the list this morning, with the prevalent bilious fever. Scarce any heat of skin, or acceleration of pulse. *All appear to labour under some hepatic affection, which seems to be immediately communicated to the brain, causing great pain under the frontal bone.** Vomiting, I think, relieves them a good deal. The quantity of bile they discharge is enormous, and of a depraved or highly vitiated quality.

Most patients of the 10th and 11th appear very ill; complaining of pain across the epigastric region, and in the head, with frequent vomiting of bile; tongues swelled and furred—no great heat or acceleration of pulse. The constipation of bowels I relieve by doses of natron vitriol. or calomel and jallap. The calomel, &c. taken from fifteen to thirty grains a day, according to the urgency of the symptoms. No appearance yet of

* It was from observing this symptom, that I was first led to form the theory of fever, sketched out in the last section—namely, that independent of the sympathy existing between the brain and liver, the congestion, or as it were, stagnation of blood in the portal circle, causes a greater determination to the brain, whereby that important organ becomes oppressed, and keeps up the train of febrile symptoms. If this cerebral congestion is relieved by bleeding, or any other means, immediate energy is communicated to the heart and arteries—reaction and biliary secretion follow, and the balance of the circulation is once more restored. Vomiting, as determining to the surface, will produce this effect; but the gastric irritability is dangerous. Lastly, mercury, as keeping up a steady action in the extreme vessels of the vena portarum, prevents the balance of the circulation being again destroyed.

ptyalism in any of the patients. The thermometer placed in the axilla of several, did not shew more than $96\frac{1}{2}^{o}$ or 97°—the pulse not exceeding 88 in the minute.

Many of yesterday's patients (12th) are also very ill. All appear to labour under some morbid affection or secretion of the liver. Two of them much troubled with cough, and spasms in the muscles about the neck, impeding deglutition and respiration. Blisters, with vitriolic æther and tinct. opii, relieved this symptom. The warm bath had no good effect. Pulse nearly natural.

Bombay, 14th March.

Nine added to the list this morning, with the prevalent bilious fever. Two of them were suddenly seized with violent mad delirium, and made a dart to get overboard, but were providentially secured in time. No heat of skin, or acceleration of pulse; but all complain of pain in the head and epigastric region, which emetics and blisters frequently relieve.

Those patients who were first attacked (10th) are very ill; many of them highly tinged yellow; their eyes swelled, and the blood vessels a good deal distended. Pain in the head still continues severe. At night many of them are delirious. The mercurial treatment continued. I tried the bark, with nitrous acid, in several cases to-day; but it did much harm, greatly increasing the irritability of the stomach. The fever seems inclined to run through the whole of the ship's company,

Bilious Fever.

The patients of yesterday (13th) are very ill. The calomel in general sits easy on the stomach, and appears to check the vomiting a good deal. I find doses of the natron vitriol. and emetic tartar cleanse the stomach and bowels better than calomel and jallap.

Bombay, 15th March.

Five men attacked last night; one with violent phrensy, who was in good health a few minutes before. He was all at once seized with mad delirium, and made a dart to get overboard, but was caught. Scarce any increased temperature of the skin, or acceleration of the pulse. The delirium was removed by an emetic. P. M. A few have their mouths slightly affected, and are much better, but still complain of pain in the head and right hypochondrium. Our decks are now crowded with sick, and the effluvia intolerable. The ship is daily fumigated. Sent twenty of the worst cases to Bombay Hospital, many of them very ill, and changing yellow.

Bombay, 16th March.

Five men were suddenly seized during the night with violent mad delirium—great oppression at the epigastrium—abdomen distended—perfect loss of memory, and all recollection of their messmates and others around them, mistaking one person for another.—Great desire to destroy their own lives, and the lives of those who held them down.—The pupils of the eyes a good deal dilated,

Bilious Fever.

and not inclined to contract when exposed to a strong light * All of these evinced a great desire for lime-juice, which I gave them, and which they frequently mistook for porter. But at times it was difficult to make them swallow any thing, as they would crash the vessel in which it was offered between their teeth. When full vomiting was excited, it generally relieved them, by bringing away immense quantities of viscid or vitiated bile.† They all complained, at intervals, of pain in the head and epigastric region, but particularly in the right hypochondrium. I bled in one case, tried the cold affusion in another, and the warm bath with purgative enemas in a third, without success.‡

* The cerebral and abdominal plethora is here so strongly painted, that I should have considered myself authorised to bleed usque ad deliquium, or the relief of the symptoms.

† The action of vomiting, by increasing biliary secretion and determining to the surface, explains the relief above-mentioned. But there is a great drawback from its utility, in the gastric irritability that too often remains. The dread of increasing the cerebral plethora or congestion, by vomiting, is more imaginary than real; the good effects arising from it, in the manner here alluded to, far counterbalancing any momentary augmentation of the plethora. (Vide article "*Apoplexy*," in Dr. Parr's London Medical Dictionary) The stomach itself is the organ which suffers most by this otherwise salutary operation.

‡ The quantity of blood abstracted is not mentioned; but it is perfectly immaterial; for unless venesection be carried *usque ad deliquium or the relief of the symptoms*, no possible good can accrue, but even harm. This is a practical fact, well known to those who have tried this remedy in the east. It may be accounted for thus: the portal congestion, from its peculiar position (in a circle of vessels, whose circumference is entirely composed of capillaries) places a great portion of the

Bilious Fever.

Our decks now being crowded with sick, sent twenty-one men to Bombay Hospital, viz.

11 of those attacked on the 10th and 11th instant; several of them changing yellow, and all of them labouring under hepatic affection, with great pain under the frontal bone.

5 of those attacked on the 12th; not quite so bad as those who were first seized.

5 of those taken ill 13th and 14th.—Symptoms nearly the same.

Tot. 21 in number.

The remaining patients on board are very ill. All complain of pain in the head and liver, with a diseased secretion of bile, and constipated state of the bowels—swelled, furred tongues—restless-

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vital fluid at rest, and determines the remainder more particularly to the brain, by which this organ becomes oppressed. Now if venesection be not carried the length of relieving the cerebral congestion, and so letting loose the energy of the brain on the system at large, it is quite clear that we diminish the strength without gaining our object, and consequently retrograde from the proper path. Indeed, we may justly say of venesection, what the poet says of learning—

A little bleeding is a dangerous thing;
Bleed free—or open not the vital spring.

This is not meant to censure the surgeon whose practice is detailed. Considering the general prejudice against bleeding in India at that time, it would have required no small degree of fortitude to employ so heterodox a remedy under the immediate eye of the presidency, where even success would hardly have supported the innovation.

ness and exacerbation at night, with slight heat of skin, thirst, and trifling acceleration of pulse—frequent giddiness and stupor, without the least relish for food. I continue to evacuate the bowels with natron vitriol. or calomel and jallap, and persevere in the mercurial treatment till ptyalism takes place.

Bombay, 17th March.

Eight men attacked with fever during the last twenty-four hours: four of them with violent mad delirium; the others complained of pain in the head, loins, lower extremities, and epigastric region, with swelled, tremulous tongues; but no great heat of skin, or quickness of pulse. Some were slightly indisposed for a day or so before; others had no premonitory sensations whatever. They were all well evacuated with the emetic-cathartic solution, or calomel and jalap: I prefer the former, as it acts both ways at once.

Several on board are very ill, without the least appearance of ptyalism; others have their mouths affected, and the bad symptoms disappearing. In the former, I can perceive little or no alteration in the temperature or pulse from a state of health.*

Sent 17 to the hospital to-day; many of them changing yellow, with *pain and fulness about the liver, and severe head-ache.*

* Is there not great torpor throughout the system here, from the state of the brain?

Bilious Fever.

Bombay, 18th March.

Six admitted this morning: three with violent mad delirium, which lasted several hours; in the others, the symptoms were milder. All our nurses are now dropping ill, and the fever seems to acquire a contagious character, as it is running through the whole of the ship's company.* One of the wardroom officers was attacked last night. We now send them on shore nearly as they are taken ill.—*All labour under some affection of the liver, which is immediately communicated to the brain.*

At noon, sent 15 of the worst cases to the hospital; several of them changing yellow. They are generally attacked first in the night, and always experience an exacerbation afterwards, as the evening closes in. No remissions on alternate days; the only amelioration is in the mornings.†

I this day visited all our patients at the hospital. Several of them are very ill—many quite yellow; and all have great pain and fulness in the region of the liver, with constipated bowels. They are treated nearly in the same manner as on board;

* Although it does not follow that the disease is contagious, because the nurses are taken ill; yet it appears very probable that this fever *became* contagious *from accumulation.*

† Miasmal fevers, when not very concentrated, often shew remissions on alternate days; till at length, as the season changes, they slide into intermittents.

When they are so virulent, however, as to occasion great and sudden derangement, whether of function or structure in important organs, it is needless to say, that such remissions cannot be looked for. Vide sections 4 & 5.

the medical gentlemen there placing their whole confidence in a continuance of the mercury. They attach much importance, however, to frictions with ung. hyd. fort. over the region of the liver; giving three grains of calomel four or five times a day, in conjunction with small doses of antimonial powder and opium, as occasion requires. Two patients at the hospital are delirious at night.

Bombay, 19th March.

Twelve taken ill with fever since yesterday; most of them attacked during the night. In eight cases it set in with violent mad delirium. Several of them were in perfect health a few minutes before; others had some slight previous indisposition.

Six cases on board have now shewn symptoms of ptyalism, and are greatly relieved in all respects, with some return of appetite. As the spitting increases, the yellowness of the skin disappears proportionally. Prescribed the nitrous acid both to the convalescents, and those now under the mercurial course; a practice much recommended by Mr. George Kier, surgeon of this presidency.

Bombay, 20th March.

Five people attacked since yesterday; two, without a moment's notice, were seized with violent mad delirium.* The other three with symp-

* The nature and violence of the attack shew that it could not proceed from *latent* miasmata received previously at

toms more moderate; but all with pain in the head and epigastric region. They were treated as already detailed. Sent 18 of the worst cases to the hospital; all labouring under hepatic affection, and many of them very ill. A few more have their mouths affected since yesterday, and are getting better.

Bombay, 21st March.

Ten cases of fever within the last 24 hours. Four of these were men who came on board from the Elphinstone East-Indiaman a few days ago, and were attacked with violent phrensy, and convulsive exertions, craving for drink of various kinds. After the spasms were allayed, they complained of pain in the epigastric region and head —tongues swelled—pain in the liver—vomiting of acrid bile*—stricture across the forehead and sinciput—pulse natural. After vomiting, they found themselves much relieved. Prescribed calomel, opium, and antimonial powder, as already

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Surat. Neither could the fever arise *entirely* from land-wind effluvia here, since the other vessels lying in harbour were not affected. Some people may suspect a local cause in the ship's hold, or elsewhere, but no such source is traced by the gentlemen composing the survey. The constitutions of the crew, coming in from the more equable temperature of the sea, were strongly affected by the abrupt atmospherical vicissitudes at Bombay; and the effects resulting thence were aggravated by the miasmal impregnation of the land-wind by night.

* Did this violent mad delirium arise from the brain sympathizing with the liver or stomach, where acrid bile might have been accnmulated? or did it arise from exhalations conveyed by the land-winds, and acting on the brain? I am inclined to think that it was owing to both.—Contagion?

Bilious Fever.

detailed. At 10 o'clock this morning Lieut. P. was attacked with delirium—pain in his head and epigastric region—tongue swelled, and white—muttering between his teeth—no heat of skin. He assisted last night in holding several men who had mad delirium, and probably inhaled the effluvia from their breath or bodies. Two patients, who were convalescing since the nineteenth, and taking nitrous acid, seem inclined to relapse as the soreness leaves their mouths;—mercury again prescribed.

Bombay, 22d March.

Five added since yesterday, with the prevailing fever. All complain of pain in the head and right hypochondrium—eyes and tongue swelled;* the latter covered with a bilious crust—small, hot, bilious evacuations by stool, with great thirst. *They cannot bear the slightest pressure on the region of the liver*

I have applied for a medical survey on the state of the ship, to inquire whether or not the fever is contagious, and what is the best plan of arresting its progress.

Bombay, 23d March.

A young man in perfect health, who has been ten years in India, while assisting his sick messmate into the hospital boat to-day, was all at once

* This symptom is noticed by Mr. Tainsh on the coast of Syria, (Medical and Physical Journal) and by the Gentleman at Bussorah, who narrates his own case. Transactions of a Society, &c. &c.

attacked with the fever. Severe pain in the head, epigastrium, and liver, was soon followed by the most violent mad delirium, and incoherent language; he fancying the people around him were going to murder him. No heat of skin or acceleration of pulse. This state lasted four hours, and was relieved by a vomiting of fœtid, green, acrid bile.

The fever not so prevalent now, and seems to have spent its force, as only one man was seized in the last twenty-four hours. The nights are becoming warmer, which I hope will soon check its progress.

Bombay, 24th March.

Five men attacked since yesterday; one with the usual mad delirium. All labour under pain in the head, epigastrium, and liver; with white, swelled tongues; pulse and temperature little increased. Prescribed gentle emetics of pulv. ipecacuan. with plenty of warm diluent drinks, on their first complaining.* After the operation, calomel, opium, and antimonial powder four times a day, with pediluvium.

Pursuant to my request, a medical survey was

* Some change in the administration of emetics is here evident, though no reason is assigned. I think the plan I have recommended, of allaying the gastric irritability by calomel, or calomel and opium, and then procuring copious intestinal evacuations, will be found the safest practice; as it effectually emulges the liver and its ducts, and prevents or lessens the abdominal and cerebral congestions; especially when aided by early venesection.

held on board to-day, by the following gentlemen, viz.

Dr. Moir, of the Medical Board;
Dr. Scott, ditto ditto;
Dr. Sandwith, of the General Hospital;
and myself.

After an investigation and mature deliberation, it was agreed that the following would be the most effectual means of checking this fever, *which appears to be contagious.**—

* "It has never been known," says Dr. Bancroft, "as I "am informed, that a single case of this fever (typhus) had "occurred on either side of the Indian peninsula." Essay on Yellow Fever, page 510. If this be the case, and if the respectable gentlemen abovementioned, who had the best means of ascertainment *on the spot*, did not give an erroneous judgment, it follows, that *other fevers* may, under certain circumstances, *become* contagious. I am at a loss to conceive how Dr. Bancroft will extricate himself out of this difficulty, unless he sets about proving that those distinguished gentlemen were entirely *wrong* in their decision. That this fever had a single symptom of typhus, Dr. B. will not, I am sure, allow; and it will require some ingenuity to invalidate, in the minds of others, the testimony of its contagious nature above adduced. In the next section, an instance still more in point will be shewn, on the Coromandel side of the Peninsula. I may here observe, that Dr. Bancroft quotes Dr. Wade, to prove that marsh fevers in the East Indies are never contagious; but he takes no notice of the opposite opinion of Dr. Balfour, who had equal experience, and delivered his sentiments from the head of the Medical Board at Calcutta. Let us support our hypotheses by balancing testimonies, rather than suppressing such as run counter to our views. I may add, that Dr. B. is *unnecessarily* severe on Dr. Wilson, and that many of those important *flaws*, which he thinks he has discovered in Dr. W.'s statement, and on which he lays great stress, appear perfectly futile to those who are conversant with nautical

"1st. To land all the sick at the General Hospital.

"2d. To remove the ship to Butcher's Island, and there disembark the remainder of the ship's crew, with their bedding, &c. &c.

"3d. To clean, whitewash, and paint the ship throughout; to fumigate her, and likewise the people's bedding, with nitrous gas; and to fire off all the lower deck guns."

Bombay, 25th March.

Nine cases of fever in the last twenty-four hours. Three, who were in perfect health a few minutes before, were seized at once with mad delirium. Several of those patients, whose fevers were checked at the commencement of ptyalism, and where I trusted the remainder of their cure to nitrous acid, are now relapsing, their mouths being quite well.*

affairs in His Majesty's service, notwithstanding the sage opinion of the Navy Office clerk.

* I have expressly remarked, in the last section, that *free and copious* ptyalism is necessary. Where this is brought on in a few days, and especially where bleeding or other evacuations have been early premised, there has seldom so much derangement taken place in the liver, or even its functions, as to require the continuance of mercury. But where no VS. was employed, and the disease has gone on many days before ptyalism, as above, the action of mercury must be kept up for some time after the fever is checked, till the functions of the liver are completely restored.

Bilious Fever.

I cannot say much in favour of the acid, though so highly recommended by Dr. Scott and Dr. Kier of this presidency, who give it in all cases during and subsequent to the mercurial course. Those attacked yesterday were gently vomited with ipecac. and warm diluent drinks; after which they took small doses of calomel, opium, and pulv. ant. four times a day, with tepid bathing; a practice much recommended by Dr. Moir of this presidency. Sent eight cases to the hospital—sixteen on board.

Butcher's Island, 26th March.

Pursuant to the decision of the Medical Survey, we this day landed on Butcher's Island our sick, sixteen in number, in various stages of the fever; some with their mouths getting sore, and the bad symptoms disappearing—some in a state of ptyalism and convalescence—and others with all the usual symptoms of the fever, particularly the hepatic affection, head-ache, and yellowness of the eyes and skin.

Butcher's Island, 27th March.

No addition to the list since landing. All those whose mouths are affected have no other complaint than debility. The sick are comfortably situated in the castle, which is well aired and clean.

B. Island, 28th March.

Several patients now convalescent, with sore mouths. One patient very restless last night, with

great heat of skin, and pain in the region of the liver, which was relieved by a blister, and calomel bolus, with opium and antimony. Most of the others have hepatic affections, which subside as the system becomes impregnated with mercury.

B. Island, 29th March.

All in progress to recovery; their mouths getting sore.

B. Island, 30th March.

Two men, who were yesterday employed in cleaning the ship, have been seized with fever; but the symptoms are milder than in those formerly attacked on board. Same treatment.

B. Island, 31st March.

Only twelve on the list. Most of them convalescents, with sore mouths.

B. Island, 4th April.

The patients at Bombay Hospital recover very slowly. Almost all of them labour under affection of the liver, with severe headache, debility, and want of appetite. They have sent us over 30 cases, for change of air. Two more were attacked yesterday with fever and dysentery; they had been employed in cleaning the ship. After evacuations, the calomel as in the others.

Bilious Fever.

B. Island, 5th April.

Of the 30 patients received from Bombay Hospital, none are worse. They find themselves cooler and more comfortable here. Several have considerable affection of the liver, attended with night fever, which is sometimes ushered in with rigors and cold chills, succeeded by hot skin, thirst, and head-ache. Prescribed five grains of calomel, one of opium, and two of antimonial powder, thrice a day; blisters to the part affected. All my original patients are better, with sore mouths and debility. *I tried the decoction of bark in several cases, but find they recover faster without it.* I also tried the nitrous acid, but cannot say much in its favour. The two patients with dysenteric symptoms have pain in the region of the liver.—The same treatment as the others.

B. Island, 6th April.

The patients from Bombay Hospital recover surprisingly fast. Three of them were highly tinged yellow, which goes off as their mouths become sore. Many have constipated bowels: decoction of tamarinds, with natron vitr. an excellent laxative. A few of the convalescents, as they get stronger, have a return of pain in the liver, for which the calomel is again prescribed.

The dysenteric patients are relieved by the calomel and opium—the tenesmus not near so violent. Mercury continued.

Bilious Fever.

B. Island, 7th April.

The patients from the hospital daily gain strength and appetite; *more particularly those whose mouths are well affected with mercury.*

All the fevers experience a nocturnal exacerbation; in some ushered in with rigors.

In Bombay Hospital this fever runs great lengths. Several patients are quite yellow, with debility—severe pain across the epigastrium, in the head, and in the loins. No great acceleration of pulse; but all are much worse at night than during the day. Calomel, opium, and antimonial powder, internally, with frictions of the ung. hyd. and frequent purgatives, are the means employed by the physicians of the hospital. They also tried the bark and nitrous acid, with the worst success: it generally occasioned great sickness at stomach, stricture on the surface, and obstructed perspiration, with universal inquietude. Removed 32 cases more of fever to Butcher's Island from the hospital.

B. Island, 10th April.

The bilious fever not near so prevalent now, as when we were on board; and in all attacks the symptoms are milder.

The patients from the hospital promise fair; some have dysenteric complaints, which go off as the mouth becomes sorer. Two fresh attacks, with much pain in the region of the liver, and bilious vomiting. The usual treatment pursued.

Bilious Fever.

Many of those last received from the hospital complain of pain in the head and liver region. Their mouths had been affected at the hospital, but are not so now. The mercurial treatment to be renewed.

Butcher's Island, 14th April.
Thermometer, 90°.

In some of the last 32 patients from Bombay Hospital, the fever seems inclined to run great lengths. Sometimes they appear tolerably well; at others, they labour under severe pain in the head, epigastrium, and liver, with great debility and aversion to food. I tried the bark in several of these cases, but think it did harm, by increasing the pain in the head, and general inquietude. In other cases, I gave small and frequently repeated doses of calomel, with the nitrous acid, which answered the purpose much better. The constipation was best obviated by decoction of tamarinds with natron vitriol.

The patients in the general hospital recover very slowly; and several are extremely ill. The hospital is close, and badly aired; and the men contrive to procure arrac, which they cannot so well do here. I therefore removed over sixteen patients to-day, all very ill; two of them quite yellow, with severe affection of the liver.

B. Island, 16th April.

Most of those last from Bombay Hospital are under the influence of mercury, in which course I persevere. The others convalescing fast.

B. Island, 23d April.

Most of my patients are now in a fair way. We have removed all that are able to bear removal, from the hospital to this island. They all labour under hepatic affection, and are under the influence of mercury, which I continue.

25th April.

We this day embarked all our sick, 84 in number, and dropped down to the middle ground. All our patients in rapid progress to recovery, and all under the influence of mercury.

At Sea, 27th April.

Sailed yesterday for Goa. Our patients in a state of progressive convalescence; thirty-two remained behind at Bombay Hospital."

The perusal of this narrative cannot fail to excite our interest, and strongly arrest our attention. We observe an unwearied assiduity and perseverance in the surgeon, with a coolness of observation, and candour of recital, that greatly enhance the value of the document. It bears on its front intrinsic marks of fidelity. There is no finesse or disguise; he tells a plain, unvarnished tale. Few medical men have gone through more trying professional scenes, in India, than this gentleman, of which the above is but a trifling specimen.

The following reflections on this fever may here be allowed.

Bilious Fever.

First, with respect to its contagious nature; I believe that few, who have been much in hot climates, will hesitate to pronounce, that at its commencement, it did not exhibit a single trait of contagion. A ship comes in healthy from sea; and after being a week in port, where no contagious disease prevails, has all at once eighteen of her crew knocked down in one night with fever, and every night afterwards a similar repetition, more or less, till in a few days—"the decks are crowded with sick, and the effluvia intolerable." From this period it certainly betrays some symptoms of a contagious nature, particularly in the check which it all at once experienced on their landing on Butcher's Island, and in the circumstance of the men who were cleaning the ship afterwards, being the principal sufferers. Add to this, the decision of the medical survey, judging it to be contagious. This corroborates my observation respecting the Endemic of Bengal, and which I believe will apply to most other endemics, as those of Batavia, Madagascar, Johanna, West Indies, &c. &c. &c. namely; that they are never originally contagious in their own nature, but may acquire that character occasionally, from accumulation or confinement.

I myself could never see any just cause, why a number of sick men, crowded together, should not generate a contagious disease, as well as a crowd of people in health. That the latter circumstance has sometimes happened, will, I believe, be very generally admitted, notwithstanding the opinion of Dr. Bancroft. But be this as it may, the fever in question was a bilious fever, and one of very considerable violence too. Although the season of

the year was not that of autumnal remittents, yet the land-winds, in all seasons, and in all tropical climates, are more or less impregnated with miasmata; and that these had a considerable share in the fever above described, I entertain no doubt.

2dly; the determination to the liver and brain was here so conspicuous, that it became the prominent feature of the disease; and although not always so unequivocally manifested as in this instance, is ever to be suspected in tropical fevers.

Many of the observations contained in the foregoing narrative, strongly corroborate my ideas on the nature of fevers in hot climates, as detailed in the preceding section. The theory is perfectly applicable to the symptoms of this fever.

In miasmal fevers, the congestions in the head and portal circle were the consequences of impaired energy in the brain and nervous system, as there explained. The same congestions take place here, partly from the same cause (miasmata conveyed by the land winds and acting on the brain) but principally in the following manner:

The extreme vessels on the surface of the body, and by sympathy, of the vena portarum in the liver, having been excited into *inordinate* action during the intense heat of the day, are suddenly struck torpid by the raw, damp, chilling land-winds; the consequence of which is, that perspiration and biliary secretion are checked; the blood determined inwards, is impeded in its passage through the liver, and accumulation ensues in the portal circle, "which is immediately communicated to the brain," as observed in this Gentleman's

narrative more than once, and as I have already explained.* During this period, the bile stagnating in the biliary ducts, becomes viscid; and on the recommencement of a hurried secretion, from emetics or other medicines determining the blood to the surface, often so obstructs the natural passage into the intestines, that regurgitation into the circulation takes place, and tinges the skin yellow. A great deal, however, is forced up through the stomach in a viscid and vitiated state; tending to keep up the gastric irritability, and sometimes to destroy the stomach altogether. This view of the subject explains why the men were almost all seized in the night, and why a nocturnal exacerbation was ever afterwards observed. With strict justice, therefore, and with more propriety, we might denominate the fever in question—"Hepatic," rather than Bilious Fever; and with some slight modification, principally in degree of violence, I shall shew, in a future section, that in reality it is, *alter et idem,* hepatitis itself.

3dly, in regard to the treatment. Although, as I have before hinted, I differ from this gentleman on the exhibition of emetics, and the omission of VS, yet, it must be confessed, that his success in the end was great, and sufficient to confirm him in the opinion, that the practice was the best that could be devised. Indeed, it was the general prac-

* "It is evident," says Dr. Blane, speaking of fever, "from "a number of facts, that the state of the *brain and viscera* "depends on that of the external surface of the body; for a "free state of the pores of the skin, provided it is general, "tends more than any other circumstance to relieve internal "pain, and also to take off delirium." 3d ed. p. 358.

tice of the country. It does not appear that any deaths occurred, either on board or at Butcher's Island; and as eighty-two men were removed back to the latter place from the general hospital, and thirty-two left at Bombay, when the Centurion sailed, the whole number sent at different times on shore to the hospital is accounted for, viz. one hundred and fourteen.

Thus out of full 150 cases of this fever, (which, it will readily be granted, was no very mild or tractable disease) none died, unless subsequently at the hospital, out of the 32 left behind. But if we look to the sequelæ of the disease, resulting from the great hepatic derangement that accompanied the febrile state, there will be some drawback on the otherwise uncommon success of the practice pursued. The utility of early venesection and purgatives is no where more conspicuous than in obviating these disagreeable consequences, as will be fully shewn in the next section, where they had a fair trial.

One thing, however, is certain; and a very important consideration it is; namely, that as the *mercurial treatment, unassisted,* was here entirely followed, and implicitly confided in, both on board and at the hospital, so it will require some sophistry in its enemies to explain away these stubborn proofs of its extraordinary power and success.

Had this fever, so strongly characterised by yellowness of the skin, bilious vomiting, head-ache, &c. happened in the West Indies, or at Gibraltar, or Cadiz, and in autumn instead of spring; and had any new mode of practice just coming in vogue been strictly pursued, would it not have furnished

a flaming communication to a medical board, announcing the agreeable intelligence, that *yellow fever* might now "hide its diminished head;" for that 150 cases of it, in a very violent form, had been successfully treated *on the new principle*, without the loss of a man! Captains and other officers would have readily attested the truth of this statement; not forgetting a few remarks on the surgeon's skill, and the dreadful nature of the fever. Promotion would have followed, as a matter of course. Error would have been thus triumphant, and *substantially* rewarded, while—— *Virtus laudatur et alget!*

Should this gentleman's successor have shortly afterwards to encounter 150 cases of *real* yellow fever, and 50 of them die, which is very probable, what would be thought of him by the same officers? Into how many delusions has the medical world been drawn in this manner! and what jarring contradictions, and virulent controversies, have resulted from them! The cause has been elegantly stated near two thousand years ago.—

> Omnibus in terris, quæ sunt à Gadibus, usque
> Auroram et Gangem, PAUCI DIGNOSCERE POSSUNT
> Vera bona, atque illis multum diversa, remota
> Erroris nebula.——————————JUV.

CONTAGIOUS FEVER IN HIS MAJESTY'S SHIPS *RUSSEL AND SCEPTRE.*

This Section is introduced principally with the View of determining, whether the Objection to Bleeding, in Fevers of the East, be founded on Facts or Prejudice.

SEC. 3.—In the year 1805, a fever of considerable violence, and of a contagious nature, broke out in the Russel, and was afterwards communicated to the Sceptre, on the Coromandel coast.—It went nearly through both ships' companies.

In the Sceptre it was most ably combated by my friend, Mr. Cunningham, who bled boldly and decisively, till the symptoms were mitigated; this and continued catharsis were almost the only means employed to subdue the fever; after which the strength was recruited with bark. The general symptoms of this fever were as follow:—

The attack was, for the most part, sudden, and without premonitory sensations. Many dropped down upon deck, as if they had been shot through the head; and on recovering a little, expressed a sense of violent head-ache, most commonly confined to the forehead and orbits of the eyes, with oppression on the præcordia. They all complained of giddiness, and great prostration of strength, which occasioned them to totter in their walk.

Fever in the Sceptre.

Rigors and chilliness then ushered in the disease. The patient always complained of the most excruciating pain in the back, loins, and extremities—frequently of the breast, abdomen, and shoulders. The countenance was sometimes pale, dejected, and collapsed; but in nine cases out of ten, there was a fulness of the features, a flush in the face, with a redness in the eyes, which appeared enlarged and projecting, with a sense of pain and dimness of vision. The state of the tongue was very variable: in some quite natural, in others dry; in some it was covered with a white, in others a yellow, slime or mucus. In all cases, where the disease was not checked by the third day, it became extremely foul. Whatever was the state of the tongue, the patient always complained of great thirst, want of appetite, and impaired digestion. There was equally as great variety in the pulse: in some it was nearly natural—in some strong, frequent, and full; in others slow. In general, however, it was both more full and frequent than in health. The skin was always dry and constricted; the temperature, in general, greatly increased. The bowels were sometimes costive, and sometimes loose; nausea and vomiting very common. These were the leading features of the disease; and the treatment was simple, but successful. *Blood was taken till the symptoms were mitigated, whatever the quantity might be; and repeated whenever they returned.* Full and free catharsis all this time was kept up; and when nothing but debility remained, bark and tonics confirmed the cure. In the Russel, where the same fever prevailed, the treatment was as different as the success. The surgeon was attacked

himself; and great numbers were sent to the hospital at Madras, where the ship then lay. The disease was afterwards got under, however, by the prompt exertions of Mr. Edman; but the ship's company felt its effects for years afterwards, and many a victim fell at its unhallowed shrine.

In the Sceptre, as it was generally checked in a very few days, the consequences were not near so lasting as in the other ship's company. A few cases are subjoined, as specimens of the practice, and proofs of the utility of venesection.

CASE I.

JOHN BROOKS, ÆTAT. 20.

26*th June*, 1805. Was seized about eight o'clock last night with rigor, succeeded by severe head-ache, confined to the eyebrows, with intense heat of skin and insatiable thirst. The eyes are red and inflamed this morning; the surface of the body hot, dry, and constricted; tongue dry, and covered with a white crust; countenance dejected, and lips quivering; pulse quick and confined.—Venesectio ad ℥xx, postea mag. vitr. ʒx.

27*th June*. The salts operated well, and the febrile symptoms nearly all removed.—Habeat statim ant. tart. gr. ij. pro emet.

28*th June*. Nearly free from complaint. Let him have ʒij magnes. vit. every two hours.

29*th June.* No particular complaint.—Continue the salts as before.

30*th June.* Continues free from fever.—The salts thrice a day.

1*st July.* Nothing but debility.—The bark mixture, and an antimonial, thrice a day

3*d July.* Returned to duty. Eight days in the list.

CASE II.

WM. ADAMSON.

June 26*th.* Was seized about ten o'clock last night with cold shivering, succeeded in an hour afterwards by violent heat, thirst, head-ache, pains in the back and loins, tension of the hypochondria. Pulse at present frequent and strong; countenance swollen and dusky; skin hot, and partially covered with clammy perspiration; tongue loaded with white, slimy mucus.

Venesectio ad ℥xxx, postea magnes. vit. ʒx.

27*th June.* Greatly relieved by the VS. and cathartic. Complains a little of head-ache—his pulse, skin, and tongue, nearly natural. Habeat ant. tart. gr. ij, pro emetico.

28*th June.* Complains of some pain in his right side; very little head-ache. Habeat mag vit. ʒiij, omni secunda hora.

29*th June.* Free from fever—ʒij magnes. vit. ter in die.

30*th June.* Nausea and vomiting—pulse frequent—skin hot—tongue loaded. Habeat ant. tart. gr. ij, pro emetico; postea magnes. vit. ʒii ter in die.

1*st July.* Nothing but debility. The bark mixture, with an antimonial, ter in die.

3*d July.* Discharged to duty. Eight days in list.

CASE III.

JOHN REDFORD, ÆTAT. 21.

July 10*th.* Seized last night with cold shivering, followed by head-ache, pain in the back and extremities. Pulse, this morning, full, strong, and frequent—tongue coated and yellow—heat greatly increased—countenance very sickly—face flushed and swelled—eyes red and heavy.

Venesectio ad ℥xx, which he did not bear well at the time, but from which he soon afterwards experienced great relief. Habeat magnes. vit. ʒx.

July 11. Complains of the most distressing pains and *sense of weakness* in his limbs. Some head-ache—pulse frequent—skin hot—tongue

furred. Venesectio repet. ad ʒxx, postea sumat magnes. vit. ʒiij ter in die.

July 12. All the symptoms mitigated. Sumat magnes. vit. ʒij ter in die.

July 13. Fever gone; complains of debility. The bark mixture and antimonial ter in die.

July 21. Returned to duty. Eleven days in the list.

CASE IV.

LIEUTENANT KENNEDY.

14*th August.* Was seized last night in his watch with violent head-ache, and such a sense of extreme lassitude and weakness, that he could scarcely walk. To-day, complains of violent pains in his back and loins. Eyes extremely red—face much flushed—intolerance of light. Took 30 ounces of blood from his arm, which relieved the head-ache instantly, and enabled him to bear the light with ease; his eyes became nearly natural, and the flushing of the face disappeared. Sickness and bilious vomiting were now induced, and from which he experienced great relief. He soon afterwards fell into a sound sleep; the skin became quite cool, and the tongue moist. After the sleep, let him have an emetic.

15*th August.* His complaints almost gone. Let him have a cathartic.

16*th August.* Free from complaint nearly. Let him have a diaphoretic ter in die.—From this time he recovered gradually."

Out of 212 cases treated on the above plan, three died, and two were sent to the hospital.

The following very interesting Narrative, written by a medical gentleman of considerable talent, who himself suffered a most severe attack of this fever, will help to dispel the prejudice which still exists in the East against venesection.

" During the night of the 15th August, I was teazed with terrifying dreams, though I did not awake till 6 o'clock in the morning, (my usual rising hour) when I found the muscles of my legs and thighs stiff and painful; and, on getting out of bed, perceived the same uneasy sensation all over my body, more particularly in my lower extremities. I had likewise a sense of weakness and listlessness, but neither headache nor thirst. After drinking some tea for breakfast, I thought myself better for a short time, and repaired to the sick-berth, where, from the vast extent of sickness in the ship, I was detained in my professional avocations for

nearly five hours. During the greater part of that time I experienced considerable pain in my back, loins, and the muscles of my thighs and legs. My appetite for dinner was entirely gone, though I had no sickness at stomach, nor loathing of food. I drank a tumbler of weak Madeira negus, and tried to walk the deck; but finding myself unable to persevere, I went to bed till tea-time, when, after drinking two or three cups, I again visited the sick, which detained me some hours, though I was very unequal to the task. On going to bed, I took two grains of tartarised antimony, which operated, but brought off little else than what I drank. I went to sleep, and had considerable rest during the night, but frequently disturbed with distressing dreams. In the morning, (17th) I awoke with severe head-ache, more especially over the eye-brows; deep-seated pain in the orbits, and a sense of fulness in the eyes, with intolerance of light. My face appeared flushed—my eyes red—with throbbing pain in my temples. My pulse at the wrist was firm, but not particularly increased in frequency; felt at the bend of the arm, however, it was remarkably sharp to the touch, with more apparent strength. This circumstance I have noticed in many others.

Early in the morning I was bled to *forty ounces,* from a large orifice;* the blood was dark and firm, but not sizy. When about

* This gentleman is of the middle stature, thin, spare habit, and delicate constitution.—I pledge myself for the strict veracity of every circumstance here narrated.

eighteen or twenty ounces were abstracted, I found the head-ache and weight in the forehead sensibly diminish; and by the time the whole quantity was drawn off, which did not require more than seven or eight minutes, the head-ache had entirely subsided, and it did not afterwards return. The heat of my skin, which was not greatly increased before, became reduced; but the most sensible relief was a total cessation of pain in my back, loins, knees, and legs; *besides the acquisition of more than double the strength I possessed before: for the debility I felt, previous to venesection, was excessive.* The only uneasiness I now felt, except a sort of unpleasant anxiety which continued to increase for many days afterwards, was a deep-seated pain in my eyes, aggravated by pressure. My head likewise continued light and giddy, but did not prevent my sitting up, or even walking. After venesection, I took a full dose of magnes. vitriolat. which speedily occasioned a plentiful catharsis, and which was kept up through the day, by frequent draughts of warm cunjee water.* No appetite during the day; in the evening sickness, and nausea at stomach: took an emetic of ipecacuan. and ant. tart. which operated, and brought off a quantity of bile. I now felt inclined to sleep; but the night was spent in watchfulness, or short slumbers, broken by frightful dreams. 18th. Found myself very poorly in the morning, though none of the febrile symptoms were prominent. I endeavoured

* Rice-water; denominated cunjee in India.

to keep up all this day, but ate nothing. In the evening found myself worse, and took two drachms of sulphate of soda every two hours, till several loose stools were procured. The night passed without sleep, my imagination wandering greatly. 19th passed nearly in the same manner as the preceding day, and I took the same opening medicine. Night sleepless, as before. 20th. Far from being well, though I could scarcely point out any particular ailment, except the pain in my eyes, and an inexpressible anxiety about the præcordia. Pulse nearly natural—tongue moist and yellow—skin a little hot—appetite gone. Took the same Medicine as yesterday. 21st. Had another sleepless, restless night—felt myself very poorly, yet could not tell how. My anxiety to see some patients who were very ill, induced me to visit them; but the interview did not contribute to my relief, and struck them with astonishment at the alteration in my appearance. 22d. Spent a very restless night, without any sleep, affected with terrible apprehensions; had a considerable degree of laborious breathing, and painful anxiety about the præcordia. Towards evening, the heat of my body much increased, with clammy perspiration. My assistant, conceiving me to be in great danger, advised me to take 15 grs. of bark every hour through the day, with a few glasses of madeira. As the night approached, I got much worse, and he insisted on sitting up with me; he likewise persuaded me to try the effect of an opiate, as I had had no sleep for some nights before.

I took 25 drops (mensura) of tincture of opium, in a glass of port wine, with the usual dose of bark.

Mr. L. appeared to conceive my disease now to be pure debility. Indeed, previous to the attack, I was much reduced, from extreme fatigue of body and anxiety of mind. I was now, therefore, incapable of conducting my own treatment. The opium soon had the effect of quieting me a little, and relieved the laborious respiration, inducing a transient slumber. When I awoke, I beseeched him to repeat the dose, (so much relief did I fancy I had obtained) and it was attended with a similar effect. Mr. L. having left me at 12 o'clock, I awoke about two in the morning (the soporific effects of the last dose being dissipated) and finding myself restless and uncomfortable, I got out of bed, and again repeated the anodyne draught, which was succeeded by another temporary respite from misery. The result of all was, a great increase of mental perturbation, and an impatience for daylight, in order that I might settle my private concerns, which I fancied were in a very deranged state. Accordingly, when my servant came, I got out of bed—began to arrange my papers, write letters, repack my clothes, and even scrambled from my cabin, on the main deck, to my bureau in the cockpit! In fact, I was quite delirious, and immediately carried back to my cot, with proper nurses appointed to watch me. 23d. All this day I continued in a very melancholy state. All I recollect was the difficulty of my breathing, and the strange

appearance which every object seemed to assume.—The lighted candle appeared like a blazing star, with large, diverging radii, surrounded by a dusky *yellow* atmosphere.*

My strength became greatly reduced, and I remained in a state of calm, melancholy resignation, waiting the fatal period which, I was fully convinced, would soon arrest the tide of existence! During these two days (22d and 23d) I was plied with bark and port wine in abundance, but without the least manifest advantage.

The burning heat of my hands and feet was almost insupportable, and my body was covered with a profuse clammy sweat, accompanied by a miliary eruption on my skin. In this state I continued till three o'clock in the morning of the 24th, when I became very bad indeed. I cannot describe my situation, but I was fully impressed with the expectation that each hour would be my last. My breathing was now become so difficult, with a sense of constriction in the diaphragm, and violent palpitation about the heart, that every inspiration was exceedingly oppressive, and every expiration was performed with so much force, that the respiratory

* Does not this imply congestion in the brain, with absorption or non-secretion of bile? Nearly a similar remark is made by the gentleman who suffered so severely by the fever at Bussora, in 1780. "In the evening, with assistance, I got upon the terrace, when the moon and stars appeared of a bright *yellow*, and all objects had that colour throughout the disease." *Vide Narrative in Transactions of a Society, &c. &c.*

organs seemed determined to empty themselves completely—never to be dilated again!*

Before six o'clock in the morning I sent for Mr. L. and assured him, if he did not afford me some relief immediately, death would inevitably put a speedy period to my sufferings, which were then inexpressible. My delirium had now subsided, for I was perfectly conscious of my deplorable situation. I examined my pulse, which I observed to him was hard and oppressed; and grasping my arm above the elbow, I pointed out to him the fulness of the veins, assuring him that venesection alone would save my life. Supposing my debility and emaciation to be insuperable objections to bleeding, I could not persuade him, for more than half an hour, to open a vein; nor even then, till I assured him, before witnesses, that in case of a fatal result, no blame could be attached to him. Induced at last to the operation, he determined to take blood, ounce by ounce. On opening the vein, the effect was astonishing. The blood gushed from the orifice, with an impetuosity I never before witnessed: the bulkhead, and beams of the deck above, were instantly covered with it; and my assistant was so alarmed, that he would have checked the effusion, had I not peremptorily insisted on the contrary. The appearance of the blood, however, struck us both; for it was thin, and as florid as any arterial blood.

* How plainly does this paint the effects of that internal congestion which takes place in all fevers!

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On abstracting ten or twelve ounces, we stopped to observe how I felt; and finding myself, as I thought, relieved, I desired him to remove his finger from the orifice, and permit the effusion to continue.——Full twenty ounces were now in the basin, beside what was scattered about the cabin. The arm was tied up, and in a few minutes the blood coagulated in one solid mass, of remarkably firm texture. My breathing was now greatly relieved; but, as I stretched myself on my cot, an astonishing chill ran along my spine, with such extraordinary sensations all over my body, that I believed myself dying! Friction with flannel was applied to my back, and I instantly swallowed twenty grains of calomel, and a large dose of magnes. vitriolat. dissolved in water. I continued very bad till 7 o'clock, when I had a most copious evacuation of hot, bilious matter, which excoriated the parts about the anus in an excessive degree. From that instant I felt astonishing relief; nay, I thought myself perfectly well!—so altered were my feelings for the better. Another similar evacuation succeeded, and removed every vestige of mental alienation. I became perfectly collected; and by 11 o'clock in the forenoon, as easy in my mind as ever I was in my life! Amazed, beyond expression, at the salutary change so suddenly effected, the terrors that had for days together haunted my imagination, now appeared, in retrospective view, like phantoms, or half-remembered dreams."

The Narrative need not be continued: suffice it to say, that as some delirium returned, his head was shaved, a blister applied, and likewise cold

lotions; a scruple of calomel was taken night and morning, for three days, when his mouth became affected, and from that time he convalesced, and recovered with the aid of tonics. He is now a living instance of the good effects resulting from bold venesection, purgatives, and mercurials. I have only to add what I think will be readily granted, that had my ingenious friend used the calomel immediately after the first venesection and cathartics, he would have restored the balance of the circulation, and cured himself as speedily as he cured his patients.—But when the physician comes to prescribe for himself, he may, in general, exclaim with the poet,

> "————Video meliora proboque;
> Deteriora sequor!————"

It is quite evident, that this fever was of a very different stamp from that described in the last section, as "Bilious Fever;" the climate, season, and all other circumstances, were different. It evinced a contagious character from the beginning; in the Sceptre, at least. In the Russel, I have good reason to believe, that it was self-generated, in consequence of great negligence and filth, in various departments. But it soon acquired the power of propagating itself in the best regulated ships. On the Russel's arrival in Madras Roads, (from a cruise off Ceylon, where the fever broke out) the disease was pronounced by a medical survey to be contagious.* But further proofs

* I was in Madras Hospital myself at the time.

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of this were soon exhibited. Some caulkers having been lent at this time, from the Sceptre to the Russel, were seized with the same fever that prevailed in the latter ship, shortly after their return to their own. Soon after this, again, the disease spread in the Sceptre's ship's company, and in particular directions from its origin; at last affecting some of those officers who were most exposed, from local circumstances, to its influence; among others, the medical officers and nurses. The Sceptre, however, put to sea, and kept cruising on the Coromandel coast, between Madras and Vizagapatam, which doubtless mitigated, in some respects, the fever.* The determination to the

* When I say that the fever was generated in the Russel from filth, and became contagious afterwards, from the crowding and dirtiness of the sick, I only state the opinion of the medical gentlemen who surveyed the ship and crew at Madras. But I do not hereby attempt to controvert the doctrine, which Dr. Bancroft has taken such pains to establish of late; namely, that *under no possible circumstance*, can accumulations of filth, or the crowding of men, in sickness or in health, generate a contagious fever. I have read with great impartiality, (perhaps with some bias in favor of the author, from the great congeniality of our sentiments on most other subjects) his arguments and elucidations: but I cannot say that conviction has followed. It is true that, by great ingenuity and elaborate research, he has succeeded in throwing an air of improbability, or even ridicule, on certain medical histories and opinions, connected with the above, which still pass undoubted, aud fully believed by nine-tenths, or rather the whole of the profession. But let it be remembered, and deplored, that "proofs of holy writ" have too often shared the same fate! On considering the above doctrine in all its bearings, I cannot see a single useful purpose which its undisputed establishment could answer; but I know that it is calculated to produce numerous evils. Dr. B. seems a little apprehensive

liver, and the gastric irritability, were not here very conspicuous; but in the Russel, where early venesection, and copious intestinal evacuations,

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of this himself; for he observes, page 102, "I have no desire "to weaken any of the *prejudices*, which tend to promote "cleanliness," &c. &c. And again, "I flatter myself that we "shall all find, within ourselves, sufficient motives to remove "or avoid filthiness, even when convinced that it does not "produce contagious fever." Alas! does Dr. Bancroft forget what the poet says of a still greater evil than dirtiness?—

"Vice is a monster of such horrid mien,
"That, to be hated, needs but to be seen;
"But seen too oft!" &c. &c.

Let us beware, then, of imitating the infidel, who, by subverting what he is pleased to term "*prejudices*,"

"Robs us of that which not enriches him,
"And makes us poor indeed!"

In the month of *February*, 1806, yellow fever, of a very severe description, broke out in His Majesty's schooner Trinidad, at Barbadoes, which was evidently occasioned by the stench arising from dirt, filth, and stagnant water in her hold; for as soon as the latter was washed and cleaned, and scuttles cut, for better ventilation, the fever disappeared. Dr. M'Arthur, physician to H. M. Naval Hospital at Deal, can certify to the truth of this statement.

In respect to the propagation of the fever in the Sceptre, Mr. Cunningham, a decided anticontagionist, has related the above particulars himself; and while he is unwilling to allow, does not attempt to deny contagion. These simple facts do not accord with the following, I think, hazardous sentiment of Dr. Bancroft, *Essay, page* 701.

"The high temperature between the tropics is so unfavourable, I need not say to the generation, but to the *existence* of febrile contagion, that, even when it happens to be brought into that temperature, *it cannot subsist, much less propagate itself.*"

made no share of the cure, these symptoms were by no means rare.

The medical narrative shews, throughout the whole progress of the disease, that its features were those of contagious fevers. And if we can safely bleed in such cases, why not in endemic fevers, where the symptoms are still more violent, and the visceral derangements more frequent, and earlier in their appearance?

This authentic narrative, too, shews us what effects result from the abstraction of twenty ounces of blood, and the exhibition of twenty grains of calomel, at a period of the disease, and in a stage of "debility and emaciation," when the orthodox practitioner, as well as the staunch Brunonian, would have pronounced such a step to be madness, if not murder.—But, "*Magna est veritas, et prevalebit;*" for of all arguments, facts are, in the end, most persuasive.

ENDEMIC OF BATAVIA.

SEC. 4.—The following, as it is the most recent, so, I think, it will be found the most accurate and detailed account, of the Batavian Endemic, that has yet appeared in an English dress. It could not fail to prove interesting at any time, but particularly at the present period, when the British flag waves over this celebrated, but insalubrious settlement; and consequently, when it is likely to be visited by numbers of our countrymen. Independent of this consideration, however, it will be found to contain many curious facts and important observations, well calculated to excite reflection; perhaps, to extend our views in the healing art.

In the month of June, 1800, His Majesty's ships Centurion, Dædalus, La Sybille, and Braave, having on board a detachment of the 12th regiment, consisting of 127 men and officers, sailed from Madras, on a secret expedition; and on the 23d of August following, the squadron anchored in Batavia Roads. The Centurion and Dædalus were placed about four miles from the garrison, to blockade the port; the Sybille kept constantly shifting about, to interrupt the approach of small vessels to the city; and the Braave lay at anchor under the small island of Onrust, about three miles from the main land of Java.

During the first few weeks, the squadron continued tolerably healthy, and without any deaths;

Endemic of Batavia.

although the crews were much harrassed by night and by day, in chasing the enemy's vessels, rowing guard, and loading or unloading the prizes off the island of Onrust.* The weather was pretty temperate at this time; the thermometer, in the shade, generally ranging from 82° to 87°, with regular sea and land breezes. When the latter, however, came off from the low, swampy grounds about Batavia, early in the mornings, it brought with it a thick mist, accompanied by a very fœtid smell; all of which would gradually go off, as the sun rose, and the sea breeze set in. During the prevalence of this fœtid mist in the morning, many people would complain of slight indisposition in the head and stomach, which likewise went off as the sun came out.

About this time the Braave disembarked an officer and some men of the 12th regiment, on duty at the island of Onrust, where a temporary hospital was established; and here the first appearance of *endemic* fever was observed. It was not, however, in any alarming degree, but chiefly confined to those who lived intemperately; as none of the officers of that ship were attacked, though they frequently slept on shore. Some of the people having broken open a spirit-store on the island, were in the habit of getting intoxicated, in which state they often exposed themselves to the intense heat of the sun, by day, and the damp, cold dews of the night. A few of the 12th regiment fell vic-

* Contrast this with what happened to the crews of the Russel, Albion, and Powerful, at the same place, in 1806, when their sanguine hopes of surprising the Dutch squadron were suddenly dissipated. Vide sec. 1.

tims to fever, much aggravated, if not occasioned by irregularity; in consequence of which, an idea was very generally propagated, that the island was peculiarly unhealthy.

On the 14th September, the Centurion relieved the Braave, and took charge of the hospital, where twelve cases were left behind, most of them very ill, and some of whom died. Prepossessed against the island, the surgeon of the Centurion declined landing any of his own sick there, at first; till, finding that some of the Braave's, who were exceedingly ill, recovered, and that none of the nurses were attacked at the hospital, he ventured to land six of his worst patients (bilious remittents and fluxes), who all did well. He therefore became convinced, that the reported insalubrity of the island was unfounded, in a great measure, at least.

Unfortunately, however, the commanding officer of the expedition, conceiving that the vicinity of the island to the main land was the cause of sickness, (which supposition seemed corroborated by the fœtid mists that daily came off from thence to the island) ordered the sick to be removed, on the 28th September, to the small island of Edam, situated nine miles out to sea; a circumstance that he thought must insure its salubrity. Here the tragic tale commences;—but first let us glance at the medical topography of the two islands. Onrust is a small island, three miles from the main, well cleared of trees, underwood, and jungle; nearly flat, and free from swamps or marshes, except one very small spot, which, however, is daily covered twice by the tides. On this island there were many excellent buildings, where the conva-

lescents could be separated from the fever cases, and where all could have abundance of space and ventilation. From the fœtid exhalations, which were conveyed by the land winds from the neighbourhood of Batavia, the sick were easily secured, by closing certain apertures in their apartments, till the sun dispersed the vapours in the morning; after which, there did not appear to be any danger from the miasmata disengaged during the day. Edam, on the other hand, though farther out of the reach of Batavian exhalations, is covered with trees, long grass, and jungle, having a part of the island itself in a stagnant, marshy state. The buildings here were indifferent, and only one long ward could be found, for the sick and convalescents; in consequence of which, the latter class of patients experienced all those dire effects produced by the depressing passions, for ever nurtured by the melancholy scenes of death, which this fatal spot too constantly presented to their view! Thus, in running from a doubtful danger, they precipitated themselves on certain destruction. In leaving Onrust, (a cleared space) to avoid the effluvium of Batavia, weakened and diluted by a three miles passage from its source, they settled on the jungly and marshy island of Edam, where pestilent miasmata, in a concentrated form, issued from every foot of ground around them! The fatal effects which followed, were predicted by an intelligent surgeon on the spot, but his suggestions were disregarded or overruled; *distance* from the main being held paramount to all other considerations.

Of sixty soldiers (12th regiment) landed at different times, *in health*, to do duty at Edam hospital, and other buildings on the island, between the

1st October and 12th November, thirty-one died. (besides five or six at Onrust, previously.) Of the remaining twenty-nine, embarked on breaking up the blockade, (12th November) twenty-two died at sea; the other seven were sent to Malacca hospital, where all, or nearly all of them, shared the same fate!—In short, only sixty-two returned out of the whole detachment; the rest having fallen ingloriously, without drawing a sword!

All the soldiers getting ill on Edam, sixteen marines were landed from the Centurion, to do night duty, as they expected an attack from the Dutch gun-boats. The whole of these were seized with the fever, and thirteen died; two recovered, and one was sent to Malacca Hospital.

The loss of seamen I have not been able exactly to ascertain; but it must have been considerable. Almost the whole of the sick [twenty-eight in number], who were removed from Onrust to Edam, [28th September] died. And as nine officers, including the surgeon, Mr. Cornish, who were doing duty at this dreadful island, perished, we may form some idea of the general mortality.

It is worthy of remark, that the Dædalus, in which twenty-five of the detachment from the 12th regiment were embarked, did not land a man on any of the islands, nor did one of her men die, or suffer an attack of this endemic. Such is the outline of its history; the following are the features of this fever, principally as it appeared at Edam, its head-quarters. They were noted on the spot, by a very intelligent surgeon of the expedition, who I believe is now in England, and who had ample opportunities of observing the disease in all its shapes, as affecting various constitutions.

Endemic of Batavia.

"The patient, without much previous notice, (if the first attack) is suddenly seized with giddiness and cold chills—sense of debility, and vomiting, with pain over the orbits, and in the epigastric region. He frequently falls down, and is insensible during the paroxysm; his body covered with cold, clammy sweats, *except at the pit of the stomach, which always feels hot to the palm of the hand*—the pulse is small and quick. On recovering a little, this train of symptoms is succeeded by flushings of heat—increased pain over the orbits, and in the sinciput—pain and a sense of internal heat about the stomach and præcordia—oppressed breathing—the lower extremities, at this time, not unfrequently covered with cold sweats. The eyes now become, as it were, protruded, and the countenance flushed. Retching, and at length, vomiting of discoloured, bilious matter, comes on—the tongue white and furred—the abdomen tense and full, with pain in the loins and lower extremities. The length of this paroxysm varied from six to eighteen hours, and was generally succeeded by cold rigors—very often low delirium, preparatory to the next stage or paroxysm of the fever. The intellectual functions now became much impaired, the patient not being at all sensible of his situation, or of any particular ailment.—If asked, how he is? he commonly answers, "Very well;" and seems surprised at the question. This was a very dangerous symptom, few recovering in whom it appeared. In this stage all the symptoms become gradually, often rapidly, aggravated; particularly, the head-ache—pain and tension in the epigastric region, and vomiting. Some patients, *on shore*, were carried off in 18, 24, 30, or 40 hours,

and others not till as many days after the attack, especially when removed on board, from the more noxious air of the island. A great proportion changed, in a few days, to a bright yellow; some to a leaden colour: other cases terminated fatally, in a very rapid manner, too, without the slightest alteration in that respect. Generally, however, the change of colour indicated great danger. Vomiting of black bilious stuff, resembling the grounds of coffee, frequently commenced early, and continued a most distressing symptom; too often baffling all our attempts to relieve it. In some, a purging of vitiated bile, or matter resembling that which was vomited, occurred; in a great many, a torpor prevailed throughout the intestinal canal—rarely did any natural fœces appear spontaneously. The pupil of the eye was often dilated, and would not contract, on exposure to a strong light—in others there was great intolerance of light:—both indicated danger. Low delirium was a pretty constant attendant on this fever, from first to last; sometimes, though more rarely, raging high delirium.* Mr. Carter's† was an instance of the latter, which he had in a very terrible degree, with red, inflamed, and protruded eyes—great inquietude—hot, dry skin—small, quick pulse; his mind actively employed about the stores and prizes on shore, of which he had the charge previous to his illness. During the violence of the paroxysm, he was quite insensible to every thing that was going on around him, constantly grasping at, or wrenching those objects

* Vide Cases V. and VII. † Case XI.

within his reach. He made frequent attempts to get overboard. In the low delirium, also, the mind is much occupied on avocational subjects: if a seaman, about the ship's duty; if a soldier, about his regiment, marching, &c. &c. Some patients were comatose from the first attack; in others, the fever was ushered in with convulsions, delirium, and cold sweats, without any intervening heat of the surface, except at the pit of the stomach, which, in most cases, was burning hot to the touch, and accompanied internally by a similar sensation according to the patient's own feelings.

Hæmorrhage from the mouth or nose seldom occurred; in two cases, which terminated fatally, the blood did not coagulate, but tinged the linen yellow.* Aphthæ appeared in a few cases, and indicated danger. Subsultus tendinum often attended both on the high and low delirium. The pulse never could be depended on. In the very last stages it has been regular; but, in general, it is small, quick, and either hard, or stringy and tremulous; sometimes, during the re-action of the system, full and hard. Deafness was very common, and an unfavourable symptom. Two kinds of eruption appeared about the lips—one, such as we often see at the decline of common fevers; the other, consisted of small black or brown spots round the lips, and was likewise a dangerous, indeed a fatal symptom. With this eruption, the teeth, tongue, and fauces generally became covered with a brown or black crust, and the breath intolerably fœtid. Locked jaw took place in two

* Case VIII.

cases at Onrust Hospital, but the patients were insensible of it:—both died. *The brain appeared the organ chiefly affected at first—the stomach and liver in succession.** In those cases which occurred on board, and where the patient had not *slept* on shore at Edam, the symptoms were much milder, and the fever resembled more the bilious remittent of other parts of the East. A great torpor prevails generally throughout the system, with the low delirium; blisters, medicines, &c. &c. having little effect on the patient, who appears as if intoxicated. When roused, he recollects the person who is speaking to him, for a moment, and answers in a hurried, incoherent manner; then lies on his back, his mouth and eyes half open; both fœces and urine often passing involuntarily. I have seen them remain in this state for hours—nay, for days together, scarcely moving a single voluntary muscle all that time. In this melancholy situation, Lieut. Neville, of the 12th regiment, lay for some days previous to his death. Never was there a disease so deceitful as this fever: I have frequently seen instances where every symptom was so favourable, that I could almost have pronounced my patient out of danger; when, all at once, he would be seized with restlessness—black vomiting—delirium—and convulsions—which, in a few hours, would hurry him out of existence!

This was the case with Mr. Broughton, purser of the Dædalus, who died of the Batavian endemic

* This accords with my observations on the Bengal Endemic, and with the mode in which I supposed miasmata act on the human body. § 1, pages 76 and 96.

at Edam Hospital. On the seventh day of his illness, he took a change for the better; and every thing was promising. The morning before he died, he expressed himself greatly relieved; and called for some mutton-broth and sago, both of which he ate with a good appetite;* spoke rationally—and was in good spirits. Towards evening the delusion vanished—restlessness—black vomiting—delirium and convulsions supervened, and carried him off before morning! I have seen many cases terminate in this manner. Two patients at Edam complained of a diminished size of the brain, and that they felt as if they could shake it about within the cranium:—both died. Mr. Cornish, surgeon of the Dædalus, who had charge for a while of the hospital, was one; he died on the seventh day of his illness.

The fatal terminations generally happened on the third—fifth—seventh—ninth—and not unfrequently the eleventh and thirteenth day; if they passed this period, they usually lingered out twenty or thirty days. But very few indeed ever ultimately recovered, who had slept on shore, and were attacked at that dreadful island, Edam! No constitution was exempted from the assault of this fever. It seized with equal, or nearly equal violence, on those who had been many years in India, and on the most robust and plethoric, or newly-arrived European. Even the Dutch officers and Malays, who had been drawn from different parts of Java, and whom we had prisoners at Edam,

* Hunger is a fatal symptom in the Yellow Fever.—Vide § 5.

fell victims as fast, or nearly so, as the English. Several officers, seamen, and soldiers, were sent on board from this island, in hopes that the change of air might mitigate the disease. Many of even the worst cases of these would promise fair for a few hours in the forenoon; but night always dispelled our hopes, for then the patient relapsed as bad as ever:—they almost all died. But their fate was considerably procrastinated by the change; many of them lingering out a great length of time on board, sinking at last from the consequences of the fever, rather than from the fever itself. Several of them changed into obstinate intermittents at sea, with great derangement of the liver, spleen, and bowels. Indeed the liver, in most cases, seemed affected from first to last in this fever; but in all protracted states of it, this affection became the prominent symptom. In those that were cut off during the first 18, 24, or 30 hours, the brain appeared to be the organ oppressed. With respect to the question, whether or not this fever was contagious? I am decidedly of opinion that it was not so. For if all the nurses and medical attendants of the hospital at Edam died, it must be remembered, that they were equally exposed to the cause of fever, whatever it is, as the soldiers and seamen who did duty at the barracks and other buildings, or who were sent to the hospital for other complaints; all, or nearly all of whom, shared the same fate. Moreover, what I conceive decides the question, is this; that although, on our raising the blockade of Batavia, great numbers of sick, in every stage of the fever, were brought on board from the hospital at Edam, yet not a single nurse, or medical attendant of any

description, ever suffered the slightest attack of fever; nor did any circumstance transpire, that could in the least favour the idea of contagion, notwithstanding that the great accumulation of sick on both decks, rendered it a matter of impossibility to separate them completely from those who were well, nor at all times to prevent a considerable generation of effluvia.

From our first arrival at Batavia, in August, until our return to Malacca, in January following, we only buried one man of fever,* who had *not slept on shore at Edam, Cuypers, or Onrust islands; whereas almost every person, who slept even a single night at Edam, died.* No ill effects were experienced from going on shore in the daytime, or among the sick at the hospital. I myself regularly visited the sick at the hospital of Edam every day, with perfect impunity, till one night, that I staid rather late, attending the unfortunate surgeon of the Dædalus; in consequence of which, I was three days afterwards seized with the fever, but recovered by mercury carried to ptyalism. I think it highly probable, however, that had I slept on shore, no medicine would have saved my life.

The night before we raised the blockade, parties of men and officers were sent on shore at Edam, to blow up and destroy the works and buildings on the island, which operations detained them about half the night there. Most of these were shortly afterwards attacked with the fever, but all recovered except one; (Mr. Parry, midshipman) his fever, too, was checked by mercury; but being

* Case XIII.

of a diseased habit, he relapsed when the soreness left his mouth, and died. The gunner, carpenter, and other officers, were all seized with the fever; but the former, being principally employed among fires, in laying trains, blowing up, &c. &c. had the disease in an infinitely milder degree than any of the others.

One circumstance more is so singular in itself, and so much attracted our notice at the time, that I think it deserves commemoration. *Of all the people or patients who slept at the fatal island of Edam, four only, to the best of my knowledge, escaped the fever entirely, and returned to Malacca. These were two obstinate venereals, and two chronic dysenterics; all under the influence of mercury, for some time before I sent them to the hospital. Their complaints did not get better in the least on shore, so that they continued to take mercury there. They slept in the same ward with the fever patients all the time, but never had the slightest symptom of fever themselves.* One other patient at the hospital did not catch the fever, but he was sent there in the last stage of phthisis, and died a few days after he landed.

I have omitted to mention, that despondency, or anxious timidity, very frequently accompanied the access of this fever; while a placid resignation to their fate, or rather, an insensibility to their situation, marked its fatal close.*

* Vide Cases XIV and XV, where this is exemplified. The same thing is observable in the yellow fever of the West Indies.—Vide next section.

TREATMENT.

In this, as well as in the common fevers of India, where a redundancy of vitiated bile might be suspected lurking in the primæ viæ, I have always prescribed a solution of salts and emetic tartar, as the first medicine, which generally operated both upwards and downwards; and subsequently, by perspiration, in a short space of time, to the great relief of the patient. On the same evening, an anodyne antimonial draught (vin. ant. ʒi. tinct. opii, gut. xv. vel xx, aq. menth. ʒij) was exhibited, to allay the irritability of the stomach—promote the cuticular discharge, and dispose to sleep. Bleeding I was afraid to attempt, as in the *only case,* to my knowledge, where it was tried in this fever, the patient very soon afterwards died, in a state of putrescence. *From this circumstance, and from some accounts which I had read, of its bad effects in fevers of the West Indies, I gave up all idea of the lancet.** I therefore had recourse to evacu-

* He probably alludes to Chisholme. "The ardent heat of the surface, the oppressed hard pulse, the pain of the side, the oppression of the præcordia, the headache, and the throbbing of the temples, seemed strongly to indicate bleeding. *Very little experience*, however, was sufficient to shew the *impropriety* of it." Chisholme. I may add, that *very great experience* has, since that time, evinced its *propriety*, even to a demonstration.—Vide next section. Its failure was probably owing to the timid manner in which it was performed.

ations from the bowels, and from the skin. For the latter purpose, I tried various medicines; such as the saline draughts, with sp. æther. nitros. tepid bathing, with diluents, &c. &c.; but I found none equal to small doses of antimonial wine, and tincture of opium; given frequently, with plenty of warm, diluent drinks, and occasional pediluvium. By perseverance in this plan for a few days, *in the less violent cases*, the skin has become relaxed, with an equally diffused perspiration—the pulse soft and natural; —the pains and delirium have disappeared; and nothing but debility remained, which was soon removed by bitters—bark, wine, and nourishment.

But alas! in the more concentrated forms of the disease, by which we were now surrounded, this practice was far from successful. *For here the patient hourly lost ground; and seemed to be hurried out of existence by the local effects of the fever; chiefly confined to the brain and liver. What the nature of these local effects was, I am unable to say. They appeared to be either inflammation—an accumulation—or a greater determination of blood to those organs, or perhaps something compounded of all these; and evinced by the red, inflamed state of the eyes—the delirium—the oppression, tension, and often pain, in the epigastric and hypochondriac regions.** Finding, then,

* I need hardly remark, that these conclusions, the result of observations made at the bedside of fever, and in an extensive field, form a striking coincidence, and a corroboration of the theory of fever which I formed in the same school of experience.—Vide sect. 1, page 97.

that bleeding would be attended with fatal consequences, and that antiphlogistics and tonics were alike ineffectual, I was forced to have recourse to other means; and knowing that mercury was a powerful specific against local inflammation, particularly of the liver, as well as a most valuable medicine in bilious remittents, where visceral obstructions were forming, or formed, I placed my last hopes in the employment of this active remedy. I generally prescribed calomel combined with opium, and antimonial powder, in some few cases with camphor, in the following manner:

Calomel, six or eight grains.
Antimonial powder, two grains.
Opium, one grain.

These were made into a bolus, and taken every three, four, or six hours; so that from twenty-four to thirty-six grains of calomel might be taken in the course of the day and night. If a salivation could be excited in a few days, the patient experienced an immediate change. The fever entirely left him—the pains abated—the intellectual functions were restored—the stools became natural, and nothing but tonics, nourishing diet, and change of air, were wanting to perfect the recovery. This last desideratum, (change of air) the most important of all to convalescents, was least of all within our power, while we inhaled the noxious atmosphere of Batavia.

Here, then, we had the mortification to see our patients, after being rescued from the jaws of death—every symptom of fever gone, and

after being several days convalescent, with a relish for food—relapse, one after the other, *as the soreness left their mouths,* and die almost to a man!

Many instances, however, occurred at Edam Hospital, where mercury was prescribed in large quantities, *after other medicines had failed in the beginning,* without affecting their mouths; in which case, they all proved fatal. I have sometimes prescribed bark and wine, in conjunction with mercury, to support the system during its exhibition, and I think that in several instances it accelerated the ptyalism.* Blisters often gave temporary relief to local symptoms, such as pain—hepatic affection, and vomiting. They likewise served as stimuli, to rouse the patient from stupor and delirium.

In the early stage of this fever, the tepid bath was used with advantage; but in advanced states of the disease, I think it did injury, by increasing debility. I have frequently experienced the greatest benefit from sponging the body with cold vinegar and water, where there was low delirium—cold, clammy sweats—and stupor. In such cases the pulse, from being 120 or 130, would fall to 90, and a refreshing sleep succeed;—but night always brought on the usual exacerbation. Gentle emetics of ipecacuanha, I have often found to relieve the delirium, oppressed breathing, and load at the stomach or præcordia, even at an advanced period of the

* This is similar to Dr. Balfour's plan.—Vide sect. 1, page 54.

disease. *In cases where great determination to the brain appeared, I have often given brisk doses of calomel and jalap, with surprising good effect. Indeed, evacuating medicines of every kind, where they do not tend to debilitate the system, are extremely useful in the early stages of this fever.* Wine, porter, and nourishment, did more harm than good, except in the advanced periods of the disease, when porter was always beneficial in checking the vomiting, and allaying the irritability of the stomach. Bark, in many cases, did much harm, by bringing on or increasing the vomiting, and other dangerous symptoms—besides checking the perspiration, and rendering the patient hot and restless.* In some cases, however, I think it produced good effects, especially when guarded with opium, to make it sit on the stomach.

But could the patient be removed from the noxious air of Batavia into a purer atmosphere during the mercurial course, I should not have a doubt in the efficacy of mercury; for it was the only medicine that ever bade fair to check the ravages of this dreadful fever. Without this change of air, I believe that every human means will have but a temporary effect; and, excepting mercury, few of them will have even that.

It is necessary to say, that copious ptyalism must be brought on, otherwise it will prove inefficient. I tried the nitrous acid, as recommended by Dr. Scott of Bombay, but cannot say any thing in its favour. The Dutch medical

* Vide Cases VIII and XVI, as examples.

practice at Batavia, consists in giving camphor in weak julep; making the patient drink quarts of it in the course of the day, till the perspiration teems from every pore of his body; keeping him all this time in a close room, well covered over with warm bed-clothes, and without paying the least attention to any urgent symptom, or other means of arresting the fever. But this plan was very unsuccessful; for the mortality in the garrison of Batavia, while we lay before it, was dreadful, particularly among the European soldiers.

Previous to our appearance, the Dutch, in general, resided a few miles up the country, on elevated ground, and out of the reach of those pestilential vapours that issue from the low swamps in the vicinity of the city. There they enjoyed tolerable good health; but our arrival forced them into the garrison, where they had hard duty, day and night, in keeping a look-out upon us, and throwing up works to defend the place. The fever, therefore, swept them off in prodigious numbers, so that their loss far exceeded ours. In an action with some of their gun-boats, we had a few men wounded, who did well on board. But this seems to be a rare circumstance; for one of our officers being on shore with a flag of truce, was asked by the governor, how our wounds succeeded; and being informed that they were all nearly well, he seemed quite astonished, and would hardly give credit to the account; declaring, upon his honour, that during fifty years which he had passed at Batavia, he never knew a single instance of a man surviving a wound received in the noxious

air of the city and its neighbourhood.* He lamented much his not having any European surgeon on the island; and on our raising the blockade, made very tempting offers to any medical gentleman who would remain behind.† But I am inclined to think, that had any one accepted the offer, his reign would have been very short, and that he must soon have fallen a victim to the climate. He also expressed great surprise, that our mortality in the squadron was not greater; as he calculated on our losing at least half of our men during our long stay there. The Dutch ships generally lost from half to three-fourths of their crews, between their arrival at Batavia, and their departure for Europe.

CASE I.

THOMAS DONNELLY, (12th Regt.)

Onrust Hospital.

September 15*th*, 1800. Has been ill two or three days before I took charge of this hospital. His symptoms, at 5 P. M. to-day, are as follow:

* This corroborates the circumstance mentioned by Lind, of the slightest scratches turning into dreadful ulcers, on board the Panther and Medway, in 1764.

† When Sir George Staunton was at Batavia, the principal physician and the principal clergyman of the place, had originally been barbers.

Pulse small, eighty-six in the minute—tongue white, tremulous, with red edges—severe pain in the head and stomach—hot and dry skin—great mental despondency—frequent vomiting—body has a diagreeable smell. Let him have æther vitr. ʒj; tinct. opii, gt. xx; aq. menth. ℥ij, immediately. This instantly allayed the irritability of the stomach.

16*th*. Passed a bad night—no sleep—this morning, pain at the stomach and in the head—bowels uneasy, with fixed pain about the umbilicus. Magnes. vit. ʒj, which operated. A blister to the back of the neck.—At night, the æther and anodyne draught as before.

17*th*. A restless night—no sleep—severe vomiting and purging this morning, of fœtid, bilious stuff, with pain in the region of the liver. High fever—delirium. Calomel, grs. viij, pulv. antim. gr. ij, opii gr. j; fiat bolus, ter in die sumend.

18*th*. Vomiting and purging allayed—other symptoms nearly the same. Continued this treatment, without any other medicine, till the

21*st*. This day his mouth is sore—fever subsided—pain in the region of the liver nearly gone—vomiting and purging ceased. All the symptoms favourable.

22*d*. Spits free—appetite returned—all bad symptoms gone; complains only of debility.—Convalescent list, with nourishing diet.

He continued to improve till the 28th September, when he was sent with other convalescents to Edam Hospital, where he caught the fever, and died in a few days, dreadfully putrid.

CASE II.

ROBERT HUNTER, (12th Regt.)

Onrust Hospital.

15*th September*, 1800. Has been ill three days with fever. Complains now (5 o'clock) of pain in the head and stomach—pulse 86, and small—frequent delirium—hiccup—subsultus tendinum—skin tinged yellow—body smells fœtid—passes blood by stool. Anodyne antimonial draught immediately—bark infusion every two hours.

16*th*. No sleep—all the symptoms as yesterday—bark continued—port wine ad libitum—sponged the body—at 2 P. M. worse—lies in a state of stupor—can scarcely be roused—skin a deep yellow—cold, clammy sweats—burning internal heat at the pit of the stomach—low delirium—pulse 100, small and irregular—stools intolerably fœtid.—After sponging, the pulse fell to 86—bark and wine continued.

17*th*. Restless night. This morning, hiccup—black vomit—subsultus tendinum—skin a bright yellow—pulse small and fluttering—difficult deglutition—fœtid smell from the body. Died on the fifth day of his illness.

CASE III.

CORPORAL STONEHAM, MARINE, H. M. S. BRAAVE.

Onrust Hospital.

September 15*th*, 1800. Was taken ill on the 12th inst. Symptoms now as follow:—pulse 100, small—frequent vomiting—severe pain in the head, stomach, loins, and limbs—deafness—skin hot, dry, and changing yellow—great inquietude—can with difficulty be kept in bed—eyes yellow—incoherence. Blisters to the head and stomach—anodyne antimonial draught at bed-time.

16*th*. No sleep last night—vomits every thing this morning—skin hot, dry, and of a deep yellow—head-ache—delirium—blisters rose, but no relief—saline effervescing draughts every two hours—at 2 P. M. vomiting checked—all other symptoms unfavourable.

17*th*. A better night. This morning, complains of head-ache and debility—pulse small—slight bilious diarrhœa—intellects impaired. Decoction of bark, with tincture of the same, every two hours. At 2 P. M. vomiting returned—skin hot—fulness about the liver. At 8 P. M. the calomel opium and antimonial bolus.

18*th*. Slept a little the first part of the night—restless during the latter. At eight this

Endemic of Batavia.

morning, lies in a state of stupor—fœtid smell from his body—clammy sweats—skin quite yellow—burning heat at the pit of the stomach—tried the bark again, which was rejected—ordered the calomel bolus thrice a day. When asked, how he does? replies, that he is "very well."

19*th.* Passed a tranquil night—this morning, stomach uneasy—pulse soft and regular—skin has a warm and equally diffused moisture on it—tongue looks clean—he got up, and walked a few minutes in the garden, (the weather being very fine) and seemed much better.—I have sanguine hopes of his recovery. The calomel to be continued. At 2 P. M. not so well—complains of uneasiness in the region of the liver—the abdomen has a tense, full feel—at 3, P. M. becomes very restless—a purgative enema, which operated—at 6, P. M. cold, clammy sweats—hiccup—subsultus tendinum—convulsions—death. Died on the 7th day's illness. A most dreadfully fœtid smell issued immediately from his body, and he was buried without delay. He was a strong, plethoric man, and had lived very intemperately.*

* Can any one doubt that *early* venesection, purgatives, and mercurials, would have gone far to have saved this patient?

CASE IV.

JAMES DRYDAM, MARINE.

Onrust Hospital.

September 15th, 1800. Has been ill for a day or two. At five this evening complains of head-ache and great debility—pulse 90, small and irregular—tongue white, and much furred—an emetic had been given him this morning, which relieved his head a little—his skin changing yellow—has a fulness, with internal heat at the pit of the stomach. The anodyne antimonial draught at bedtime.

16*th.* Passed a good night. Symptoms more favourable this morning—skin warm and moist complains of much debility. The bark infusion every two hours, with an occasional opiate.

17th. Had a tolerable night—this morning complains much of his head, with general debility—pulse small—a bilious purging—great deafness—intellects much impaired—at 2, P. M. became hot, dry, and restless—omit the bark, and let him have a saline cathartic, which operated—at 6 P. M. he is better—anodyne antimonial at bedtime.

18*th.*—Passed an indifferent night. This morning, much debility—cold, clammy sweats—great head-ache—deafness increased—pain and

heat at the stomach—bark infusion, as on the 16th.

19*th.* Symptoms nearly as yesterday—rejects the bark in every form, with great aversion—relishes port wine, which is allowed him—at 2 P. M. very restless—oppression and fullness about the region of the liver, and all over the abdomen—skin hot, dry, and constricted.—A purgative enema—at 8 P. M. calomel opium and antimonial bolus.

20*th.* Passed a restless night—fever very high this morning—head-ache distressing—delirium—very great deafness—passed some green fœtid stools—fixed pain about the umbilicus—the calomel bolus ter in die, with blister to the head—at noon, no better—at 6, P. M. more composed—the calomel bolus to be continued.

21*st.* Little or no alteration since yesterday—the calomel bolus to be continued thrice a day.

22*d.* Severe pain in the forehead, and about the region of the liver—cold chills, alternated with flushings—skin quite yellow—countenance sallow—heavy and dejected—the calomel regularly continued thrice a day, till

26*th.* Since the 22d he has been very ill, and all the symptoms unfavourable—this morning ptyalism came on, and every thing changes for the better—hearing returned—head-ache gone—tension and pain in the epigastric region and right side have subsided—pulse is natural—skin moist

and warm, but still yellow—omit the calomel—an anodyne at night.

27*th.* Mouth sore, and spits free—complains only of a slight pain in his right side, and some uneasiness in his bowels before he goes to stool—yellowness goes off—keen appetite—nourishing diet.

28*th.* He was walking about as a convalescent, and sent this day to Edam Hospital, where he afterwards caught the fever, and died.*

CASE V.

JAMES BARRETT, (12th Regt.)

Onrust Hospital.

September 15*th,* 1800. Has been ill about forty-eight hours. At 5 P. M. to-day, a mad delirious fit—with difficulty can be kept in bed—tongue tremulous, white and furred—eyes red—complains frequently of his head, with pain in the epigastric region—skin hot, with some perspiration on it—has been taking bark three or four times to-day—head to be shaved and

* Notwithstanding the great disadvantages under which the mercury laboured here, from the lateness of its exhibition—the previous irritation of bark and wine, together with the want of copious intestinal evacuations, it finally triumphed over the disease. No one will say that this was a slight attack. The next case is still more interesting.

blistered—pediluvium—an æther and anodyne draught at bedtime—the bark infusion to be given through the night.

16*th.* Had a very restless night—pain in the head excessive, and not relieved by the blister—calomel, gr. x, jalap ʒj, statim sumend.—at 1 P. M. it operated, and brought off numerous, copious, fœtid, green stools. At 6 P. M. head not yet relieved—a profuse perspiration—pulse 90—tongue brown—talks incessantly, in the most incoherent language—all the symptoms very unfavourable—the anodyne antimonial at bedtime.

17*th.* He lay in a state of stupor all night—this morning, skin warm, and a little moist.—decoction of bark every two hours, which he retains well on his stomach. At 1 P. M. lies in a state of stupor, and with difficulty can be roused—mutters between his teeth incessantly—eyes inflamed and prominent—abdomen tense and full—pulse frequent and hard—tongue dry—bowels opened by an enema—continue the bark—and to take calomel, gr. x, opii, gr. j, at bedtime.

18*th.* First part of the night more composed—restless in the latter—this morning, stupor as before—lies on his back, with mouth and eyes half open—with difficulty can be roused—body has an offensive smell—cold, clammy sweats—skin changing yellow fast—pulse small and quick—when roused, will take whatever is offered—the decoction of bark through the day—repeat the calomel and opium at bedtime.

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19*th.* Passed a tranquil night—repeated the calomel this morning—the decoction of bark to be continued—at 1 P. M. omitted the bark, and exhibited a saline cathartic, which brought off three copious fœtid stools—at 8 P. M. he appears better—he is perfectly sensible—skin a bright yellow—but is warm, and has an equally diffused moisture on it—repeat the calomel and opium as in the morning.

20*th.* Passed an easy night, but had no sleep—at 8 this morning, he seems better in every respect—continues sensible—repeat the calomel—also decoction of bark—at 1 P. M. uneasiness in his stomach and bowels—fever increased—great incoherence in language and ideas—*omitted the bark; prescribed a cathartic, which brought off many copious, fœtid stools—at eight in the evening, a remission of the fever—other symptoms more favourable*—the calomel continued.

21*st.* Passed a good night, and is better this morning—repeated the calomel twice to-day—with bark decoction—at 8 P. M. an exacerbation of fever—repeat the calomel.

22*d.* Passed a tolerable night—a mercurial odour on the breath—skin becomes less yellow, with equally diffused perspiration—the calomel and decoction as before.

23*d.* Mouth sore, and all symptoms favourable—yellowness goes off the skin—perfectly sensible—no head-ache—stools more natural—

craves for food—continue the calomel, with a pint of wine and nourishing diet.

27*th.* Ptyalism did not come on copious till to-day—he is now free from every complaint, except debility—appetite good—spirits free—yellow tinge almost gone—omit all medicine—convalescent list.

28*th.* He was this day sent, with other convalescents, &c. to Edam Hospital, where he afterwards caught the fever. He was removed immediately on board—the same plan of treatment adopted, and as soon as ptyalism appeared he began to mend.—He was one of the very few who ultimately recovered from the fever of Edam.*

CASE VI.

WM. WARD, MARINE.

Onrust Hospital.

September 18*th,* 1800. At 1 P. M. to-day, complained of pain in his head, back, and loins—skin burning hot—tongue foul—pulse small and quick—pain at the stomach—nausea and retch-

* I leave it to the candour and judgment of the reader, whether the cure is to be attributed here to the bark decoction, or to the intestinal evacuations and mercury. This is a very valuable case—for it was a very formidable one; on the 18th it appeared nearly hopeless.

ing—an emetic, which operated well—at night the anodyne antimonial draught.

19*th.* Passed a restless night—this morning complains much of his head—severe purging and griping—skin intensely hot—tongue foul and dry—the emetic-cathartic solution, which operated well both ways—at 8 P. M. the anodyne antimonial draught.

20*th.* Passed a very bad night—high fever this morning—dysenteric purging—skin burning hot and dry—tongue foul—pulse very quick—fixed pain about the umbilicus—tenesmus—calomel, grs. viij; pulv. ant. gr. ij; opii, gr. j; to be taken twice a day.

21*st.* All the symptoms worse to-day—skin clammy, with partial sweats—stools green, thin, small, and frequent—severe tenesmus—burning heat and pain at the stomach—omit the calomel—saline draughts with camphor through the day—anodyne antimonial at night.

22*d.* Passed a very restless night—severe purging of green, fœtid stuff—pain in the head and epigastric region excessive—skin intensely hot—pulse quick—thirst insatiable—great inquietude, never resting a minute in one position—had recourse again to the calomel, opium, and antimonial powder—but to be taken morning, noon, and night.—At 8 P. M. a little more composed.

23*d.* Passed a better night—this morning very restless and uneasy—all the symptoms as bad as

yesterday morning, with the addition of frequent delirium, and pain in the right side.—The same treatment as yesterday.

24*th.* Slept some last night—symptoms this morning rather more favourable—the internal burning heat in the epigastric region not so great—the extremities covered with cold, clammy sweats—the calomel bolus repeated three times, as usual, with camphor mixture every four hours.

25*th.* The dysenteric symptoms not so violent to-day—heat and pain in the epigastrium diminished—the pain of the right side subsiding—at noon, a violent paroxysm of fever, ushered in with rigors, which has left him in a very debilitated state—added decoction of bark and port wine to the mercurial treatment.

26*th.* Mouth sore—fever gone—bowels easy—asks for food—medicines continued as yesterday.

27th. Ptyalism—recovering fast—omit the mercury, and to have nourishing diet.

28th. Ptyalism continues—free from all complaint—returned on board of his ship.*

* This is also a very valuable case. It shews us the fever accompanied with dysenteric symptoms—and where the determination to the liver was quite evident.

If these honest and plain narratives do not remove every shadow of doubt, in regard to the efficacy of mercury in tropical fevers, all human testimony is vain. These documents

CASE VII.

JOS. HUGHES, MARINE.

Off Edam Island.

October 9th, 1800. Complained this morning of the usual symptoms of the Batavian fever—his head-ache exceedingly intense.—He had done duty on Onrust Island, where he slept, and often got intoxicated with arrac—an emetic, and after its operation, the anodyne antimonial draught.

10*th.* A very restless night—great pain in the forehead this morning—internal heat and pain at the pit of the stomach—tongue foul—bowels uneasy—pulse full and quick—frequent small, green, fœtid stools—ordered the emetic-cathartic solution, which operated well both ways—the anodyne antimonial as last night.

11*th.* At one o'clock this morning, he was seized with convulsive twitchings—difficult breath-

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are more convincing than if they came from myself—for I might either be blinded by prejudice, or have some interest in distorting the truth. Neither of these can have operated here—for the practitioner evidently resorted to mercury with reluctance, and hardly ever, till other means were first tried. Lastly, I cannot deviate in the least from the letter of the original; for the gentleman who noted these cases is now in England (though perfectly unconscious of their coming before the public) and could instantly detect any misrepresentation.

ing—alternate flushes and rigors—rattling in his throat—insensibility—pulse small, quick, and irregular—sp. c. c. gt. xxx, aq. menthæ, ℥iß, æther vitriol, ʒß—this paroxysm lasted three hours, with momentary intermissions—at 8 this morning, more composed—skin hot and dry—tongue foul and furred—abdomen full and tense—natron vitr. ℥j—two copious, fœtid stools—evening, something better—perspires—the night draught as before.

12*th.* Slept till midnight—at 1 o'clock, stole out of bed, and leaped overboard; but was instantly picked up by a boat, that happened to be alongside.—He was now perfectly sensible, and somewhat frightened—could not account for his conduct—returned to bed—at nine this morning, tongue foul—skin warm and clammy—body has a disagreeable smell—camphor julep every two hours—at 1 P. M. became very restless—made several attempts to get overboard—(to walk in the garden, as he expresses it)—talks incoherently—at 4 P. M. worse—cold, profuse, clammy sweats—complains of no pain—when asked how he does? replies, "Very well."—pulse small and fluttering—lies on his back, in a state of stupor—mouth and eyes half open—can hardly be roused—the camphor julep continued, with an opiate at night. He drank a pint of madeira wine in the course of the day.

13*th.* No sleep last night—cold, clammy sweats to-day—made several attempts to get overboard—pulse small and quick—tongue covered with a brown crust—still answers that he is "very well"

(a dangerous symptom)—decoction of bark and port wine—his stomach retentive—opium and camphor at bedtime.

14*th.* Very restless in the latter part of the night—delirious—made several attempts to get overboard.—This morning, violent black vomiting, which was checked at 1 P. M. by opium, æther, and a blister to the epigastrium—great restlessness—constant desire to get overboard—skin cold and clammy—brain and mental functions still much disordered—craves for wine, which is given to him—at 4 P. M. more collected—begs to be sent to the hospital—his request complied with.—At 5 P M. he got up, in good spirits—dressed himself—went into the boat, unassisted—when landed, he insisted on carrying his own hammock and bed up to the hospital, which he actually did—he there drank a glass of port wine, and went to bed—at eight in the evening he was in a sound sleep, with a fine warm moisture diffused over his skin, and every symptom favourable—at five in the morning, he was found dead in his bed—lying on his face, with nearly a gallon of red and yellow stuff, resembling blood and bile, under him, and which was still running from his mouth.—On shifting him, to have him buried, his whole body emitted the most intolerable effluvia. He must have died suddenly, and without a groan ; as three nurses sat up in the ward, and thought him asleep all night.*

* This is a singular, though, I think, not inexplicable case. It furnishes at least one important reflection—namely,

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CASE VIII.

ROBT. ALDRIDGE, MARINE, H. M. S. CENTURION.

Off Edam Island.

13*th October*, 1800. Was seized last night with fever, ushered in by cold rigors. At eight this morning, skin clammy—head giddy—pulse small and quick—tongue white and furred—bow-

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how easily we may be deceived by the phantom *debility*. Forty-eight hours *before* this man carried his hammock to the hospital,—"he lay on his back, his eyes and mouth half open—his pulse small and fluttering." Was not the debility here apparent, not real? Were not his powers oppressed—not exhausted? Else how could two short days of subsequent fever and delirium give him the almost miraculous strength—"to rise, take up his bed, and walk?" It is quite inconsistent with observation, that this could have been one of those fatal calms preceding death, from mortification of an important organ. In such cases, although the patient fancies himself relieved, or even that he is strong, there is little real force. The sound sleep, and warm moisture on the skin, are very incompatible with actual mortification.

But if we advert to the state of the brain for several preceding days, we shall not hesitate to say, that effusion or rupture of vessels carried him off instantaneously.

The morning before, we see that he was seized with violent black vomiting, which was checked by medicine. The return of this, when he was in bed, after the preceding exertion, and a great determination for some time past to the brain, has caused sudden rupture or effusion, which induced immediate death, or apoplexy ending in the same. Finally, was it not this *apparent debility* which prevented the exhibition of cathartics and mercury, so successfully employed in the preceding case?

els uneasy, with pain about the umbilicus—a saline cathartic—after operation of the cathartic—camphor julep every two hours.

14*th.* Passed a tranquil night. At eight this morning, skin hot—severe pain in his head—stomach uneasy—an emetic of ipecacuan, which brought off much green bile—an anodyne antimonial at bedtime.

15*th.* At ten o'clock last night, a great exacerbation of fever, with delirium, which remitted at four this morning. At 8 A. M. complains of debility and head-ache—skin soft and perspirable—bark decoction every two hours—at noon became delirious—skin hot and dry—at 6 P. M. high fever—head much affected—great incoherence—pulse full—tongue foul—bowels costive—omit the bark—a saline purgative procured three stools—the draught at bedtime, as before.

16*th.* Passed a restless night. At eight this morning, high fever—severe pain in the head and stomach—internal burning heat in the epigastrium—calomel, gr. viij ; pulv. ant. gr. ij ; opii, gr. j ; ft. bolus, ter in die.*—At 2 P. M. skin moist and

* Too late. An active employment of mercury from the beginning, without any other aid than copious intestinal evacuations, would have had the patient now on the verge of ptyalism.

Let those who are disposed to cavil at some points of practice pursued here, particularly the exhibition of bark, and omission of venesection, point out from what sources the surgeon could have drawn a better *methodus medendi.* Certainly

warm—pain in the head and stomach—6, P. M. became very hot and restless—pain in the region of the stomach severe, with intense burning heat there, both internal and external—calomel, &c. continued.

17*th.* Was easy all night—passed two copious stools—skin was warm, with equally diffused moisture—at eight this morning, he is better—the pain has left his head and stomach—at 1 P. M. uneasiness in the region of the liver—*cannot bear the least pressure over it*—the calomel continued ter in die, as usual—at 3 P. M. stomach uneasy—black vomit, (resembling coffee grounds, exactly) —severe pain in the forehead—the effervescing draughts every two hours—added four grains of camphor to the evening dose of calomel.

18*th.* Restless night—*delirium—watery eyes* —skin changing yellow. This morning, complains of twitchings in the calves of his legs—collected and sensible when spoken to—calomel and

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not from books; at least, not from the works of Bontius, Lind, Clark, or Balfour. Nay, at this day, venesection is condemned and bark extolled! Vide Hunter on the Diseases of Jamaica. And Dr. Bancroft, the latest writer on Yellow Fever, seems to rely principally on bark. Mr. Curtis, the last writer on the Diseases of India, boasts of having seldom "wet a lancet," except in specific inflammation.

If it be said, why did not *observation* point out the necessity of bleeding, and the injury occasioned by emetics and bark? I answer, by asking,—Why did not *observation* point these out long ago to those writers enumerated? Why did not Cullen find out the utility of purgatives in fever before Hamilton?

camphor as before—blisters to his legs—at noon, skin cold and clammy—profuse perspirations—tried the bark in various forms—but the very sight of it made him vomit—the calomel and camphor continued ter in die—at ten P. M. sensible to the pain of the blisters.

19*th.*—Slept a little last night—this morning, giddiness—skin of a bright yellow colour—took the bark, with much persuasion—at 11 A. M. it made him sick, hot, and restless—bowels uneasy—abdomen tense and full—glysters brought away several fœtid stools, and stuff like grounds of coffee—took xxxiii grains of calomel to-day, but no appeaeance of its entering the system—skin of a deep yellow colour.

20*th.* Restless and delirious in the night—oozing of blood from nose and mouth, which tinged the linen yellow.* This morning, skin hot and dry—tongue brown—intolerance of light—head much affected—starts when spoken loudly to—says he is "very well," and seems much surprised at being asked the question—lies on his back, with mouth and eyes half open—pulse small and stringy—took xxxii grains of calomel to-day, with camphor julep.

21*st.* Symptoms as yesterday. In this state he continued for forty-eight hours, when the black vomit, with convulsions, carried him off, on the

* If this be not a case of "*Yellow Fever*," I know not what is.

23d October, the 10th day of his illness. Not the least symptom of ptyalism could be seen, though he took calomel to the last hour.—He had done duty on shore, both at Cuypers and Onrust, where he lived very intemperately.*

CASES IX & X.

SERJEANT COWARD AND MICH. CAMILER, R. MARINES, H. M. S. CENTURION.

Off Edam Island.

October 14*th*, 1800. They were both attacked with the Batavian fever yesterday, and with symptoms nearly the same as Aldridge's, described in the last case. The emetic solution was prescribed, and operated well both ways—at night, the anodyne antimonial draught.

15*th*. Symptoms nearly the same as Aldridge's; tried the bark in various forms, but they could not retain it a moment on their stomachs;—indeed the sight of it made them vomit—calomel, opium, and antimonial powder, as prescribed for Aldridge, was given three times a day, without any other medicine, till their mouths got well affected (27th October), when every bad symptom disappeared. They were both perfectly yellow before the mercury entered the system; but as ptyalism came on,

* Was there not effusion in the brain here, as well as derangement in the liver?

their skins assumed a more natural colour. They continued a long time in the convalescent list, before they acquired strength. They had done duty and slept on shore at Cuypers and Onrust islands, but never slept at Edam.

CASE XI.

MR. THOS. F. CARTER.

From Edam Hospital.

October 26th, 1800. Has been six days ill with the Batavian fever on Edam Island, and sent on board at six o'clock this evening, in hopes that change of air may mitigate the disease.

He now complains of coldness in the lower extremities—bad taste in his mouth—a troublesome purging—great dejection of spirits—pain in his head and epigastric region—pulse small and quick—frequently delirious before he came on board—had taken bark in various forms at the hospital, without any benefit; on the contrary, he daily got worse.—The emetic-cathartic solution was given him this morning on shore, which is still operating—as he was much fatigued by coming on board, gave him a glass of port wine, and the camphor julep.

27th. He was delirious and sleepless all night—skin hot and dry—the solution continued to operate in the night both ways, and he passed several fœtid stools. At nine this morning, all the symptoms worse—talks in the most incoherent

language—tongue very foul—*pulse full and quick* —complains of great pain over the orbits and sinciput—pain and burning internal heat at the stomach—calomel, gr. viij; camphor, gr. iv; opii, gr. j; ter in die *—a blister inter scapulas.

28*th.* First part of the night restless—latter part quiet, and slept a few hours. At nine this morning, all the symptoms aggravated—delirium —*full, quick pulse*—pain over the orbits, and in the sinciput—right eye much inflamed—blister rose well—is sensible to the pain of it—same treatment as yesterday.

29*th.* Delirious all last night—talks incessantly this morning, in very incoherent language —says he feels as if he had two heads—his eyes cannot bear exposure to the light †—has frequent convulsive twitchings of the tendons—repeated the calomel this morning—he drank a little brandy and water, which he relished much—at 8 P. M. very restless—skin hot and dry—tongue foul—twitchings of the tendons—right eye much inflamed, and prominent—had one fœtid, bilious stool—when asked how he does? replies, "Very well;" and that nothing is the matter with him—

* This is the seventh day of the disease—greatly too late!

† There are evident symptoms of congestion, if not inflammation in the brain here. This oppressed state of the sensorium renders the absorbent system so torpid, that there is no chance of the mercury being taken into the constitution. Evacuations, under these circumstances, by relieving the brain, invariably accelerate ptyalism.

his mind constantly employed about the ship's duty and prize stores—his countenance singularly wild and sallow—omit the calomel—pediluvium—diaphoretic powders of camphor and nitre—diluents.

30*th.* Very restless all last night—with great difficulty could be kept in bed, preferring the cold deck—was highly delirious—right eye prominent, and much inflamed—complains of pain in the calves of the legs—blisters to his legs—gave him a brisk dose of calomel and jalap, which operated, and brought off two copious fœtid stools—at noon, he is much more composed*—complains of strangury from the blisters—semicupium and sp. æther. nitros. gave relief to this symptom—great deafness—clammy, profuse sweats—small, weak pulse—bark and claret—the calomel to be again renewed—at 6 P. M. his right eye still inflamed, red and prominent—pulse full—violent delirium subsided—℥ß *bark, and a pint of claret, since morning,* which his stomach retains.†

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* Although evacuations always gave more or less relief in this fever, yet the idea of *debility*—that unlucky term—seems ever to have cramped their employment

† "The prejudices that formerly existed against the Peruvian bark, in fevers," says Dr. Hunter, "are no longer in "being." (query) "They were founded in *idle speculations*, "and originated with the learned, from whom they descended "to the great body of the people; but even with the *vulgar* "they are now extinct." Diseases of Jamaica, page 122. If Dr. H. really believed the above, so late as June, 1808, when he dates his preface to the last edition, his information is not very extensive. At page 98, we have this remark—"In almost every case where the disease is *violent*, and the

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31*st*. Very restless all night, with *raging high delirium*—great difficulty in confining him to his bed—tongue and lips brown and crusted—stomach tense, with burning internal heat in the epigastrium—right eye red and prominent—at one o'clock this morning, a blister renewed to the back of his head—the calomel and jalap repeated; at six this morning no better—right eye inflamed, prominent, and seems *starting out of his head*, with other symptoms of a highly deranged state of the brain—*neither the blister nor purgative has taken any effect**—two large yellow blotches have appeared on his neck—I am forced to keep him

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" patient much reduced, it (wine) is highly grateful and cor-
" dial. It is of the utmost consequence, in giving both nou-
" rishment and wine, that they be repeated often." Dr. H. recommends about a pint a day, in small quantities at a time, and the same of food. Who can blame the surgeon for pursuing a plan recommended by such authority? And, as I observed before, where has he any better instructions in fevers of the East?—Vide Bontius, Lind, Clark, Balfour, Curtis.

" On entering one of the wards at Haslar," says Dr. Trotter, " one of the Raisonable's people was *sitting up in bed*, with five guineas in his hand, and begged me, with great earnestness, to allow the nurse to lay the whole of it out for wine. This man had a *wavering* about him at the time, but which was always mitigated after his *dose*. The natural craving for this *cordial* induced me to increase his allowance to *four pints in the twenty-four hours;* it was almost the only case where my prescription exceeded *three pounds*. He had been a week ill in his ship. There was a *wildness in his looks*, not to be described; but it always denoted danger. *He died three days afterwards*, and took his medicine (wine lb. iv. daily) till within an hour of his dissolution." *Medicina Nautica, vol.* 1, *p.* 289.

O tempora! O mores!

* The torpor alluded to is here manifest—and there can be little doubt of its dependance on oppressed sensorium.

lashed down in his bed, as he made several attempts to get overboard—tore the blisters from his head—constantly grasping at every object—great deafness—no recollection of any person—his mind still employed about his accounts, and the ship's duty—strong convulsive spasms of the whole body; so that it often requires two men, with all their strength, to keep him down*—the raging high delirium sunk hourly, till, a few hours before death, when we could hardly hear him articulate—he was carried off with hiccup and convulsions next night, his body very little reduced, and without the least disagreeable smell.

Previously to the attack of fever, he was constantly employed on shore at the island of Edam, where he had charge of the prize-stores, and where he frequently exposed himself to the intense heat of the sun by day, and the noxious influence of the air by night—he used to sleep at the hospital—he died on the 11th day of his illness, six days after he came on board.

* With the strength of two men the day before death—his body unreduced—and where mad delirium, and eyes starting from their sockets, declared the state of the brain, I should have been tempted to bleed *usque ad deliquium*, or the relief of the symptoms, coute qu'il coute.

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CASE XII.

MR. HAMMOND, CAPTAIN'S CLERK.

Off Edam.

October 23d, 1800. Was in the habit of being much on shore at Edam Island during the day; but never passed a whole night there—seized last evening with the usual symptoms of the Batavian fever—head much affected—great pain over the orbits—took the emetic-cathartic solution, which operated well—at night the anodyne antimonial.

24th. Passed a restless night—his bowels very uneasy—this morning he is very ill—all the symptoms violent—small, hot, bilious stools—the solution as yesterday, which operated both ways—at night the draught repeated.

25th. Passed a very bad night, with violent pain in the head and epigastric region—hot, dry skin—quick pulse—great inquietude of the system at large—could not rest a moment in one position—foul tongue. This morning, all the symptoms the same as during the night—calomel, gr. viij ; pulv. ant. gr. ij ; opii, gr. j ; three times a day.* At 8 P. M. he appears a little more composed.

* This is the fourth day of the disease, counting the evening of the 22d as one.

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26*th.* Had a violent paroxysm of fever in the night, ushered in with cold rigors. This morning, he is very poorly indeed—distressing bilious purging—countenance sallow and anxious—all symptoms appear exceedingly unfavourable—continue the same treatment.

27*th.* Passed a bad night—no alteration for the better—head-ache intense—pain in the epigastric region—hot, dry skin—pulse quick—dysenteric purging—medicine continued.

28*th.* No alteration.—had a violent exacerbation of fever to-day, ushered in, as before, with rigors—continued the same treatment—no appearance of ptyalism.

29*th.* Mouth sore.—All the symptoms alleviated—head-ache, and pain in the epigastric region, diminished—bowels easier—calomel bolus twice a day only.

30*th.* Mouth sorer—all the bad symptoms disappearing—complains only of debility—decoction of bark and wine.

31*st.* Mouth very sore—spits copiously—keen appetite—omit the calomel—put him on the convalescent list, with wine, and nourishing diet—from this time he recovered rapidly.—This case was treated entirely with mercury.*

* It would be difficult to conceive how a more unequivocal proof of the efficacy of any medicine could be given, than

CASE XIII.

PATRICK RYAN, SEAMAN.

Off Edam.

October 28th, 1800. This morning seized with the usual symptoms of Batavian fever—head-ache—pain and heat in the epigastrium—hot skin—quick pulse—emetic-cathartic solution, which operated well—in the evening a remission—anodyne antimonial.

29*th*. Restless night—complains much of his head and stomach—skin hot—lower extremities cold and clammy—effervescing draughts—at night, anodyne antimonial.

30*th*. Restless night—bilious vomiting to-day; pain and burning heat at the stomach—bilious purging—small, quick pulse—bark mixture, with lime-juice and mint-water—evening, the vomiting checked.

31*st*. Bad night, with delirium—more composed to-day—bark continued, with six gr. calomel, and one gr. opium, night and morning.

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is afforded in this case. I had set it down as lost, till I saw the words "*sore mouth*," on the 29th, which dispelled my fears; for well do I know, from personal feeling, what *ease* this *soreness* brings.

November 1st. Slept all night. Passed some fœtid stools this morning—delirium—great inquietude—skin hot—eyes wild—same treatment.

2d. No alteration—pulv. rhæi, in addition to the treatment of yesterday, which procured some bilious stools.

3d. Restless night—sensible this morning—surprised to find his legs covered with scorbutic ulcers—omit the calomel on this account.*—prescribed the bark in decoction, with port wine and porter as much as the stomach could bear.

4th. Much purged all night—great delirium—this morning, very ill—skin cold and clammy—when asked how he does? replies, "very well," surprised at the question—bark makes him vomit; relishes porter only—at 6 P. M. sinks fast—body has a fœtid smell—skin changed yellow—knows no one—ulcers on his legs in a dreadful state—æther. laudan. aq. menthæ—porter ad libitum.

5th. No sleep last night—this morning, the black vomit—skin a deep yellow—insensible—

* Although a scorbutic diathesis must be unfavourable to the exhibition of mercury, yet an unreasonable dread of this medicine has gone abroad in such cases. To my knowledge, mercury has been pushed the length of ptyalism, for the cure of dysentery, where the hams were contracted, the ankles livid, and the gums spongy with scurvy; and no bad consequences ensued. Mr. Thomson, in the Lancaster, off the Isle of France, October 1804, witnessed this in many instances. —In fever or dysentery, I should not hesitate to use mercury, combined with opium, regardless of a scorbutic taint.

lies on his back, mouth and eyes half open—body smells intolerably fœtid—black vomit continues —at 10 P. M. died.

This is the only person who *died* of the Batavian malignant fever, *who had not slept on shore* at Onrust, Cuypers, or Edam. Long, previously to his illness, he was of a diseased, scorbutic habit—dirty, indolent, and desponding in his character.

CASE XIV.

MR. POWEL, MASTER'S MATE.

At Edam.

November 13th, 1800. Was attacked with fever yesterday, on shore, at the island of Edam, where he has resided, in charge of the prize stores, since the death of Mr. Carter. This morning, complains of the usual symptoms—pain and giddiness of the head—hot skin—cold extremities—quick pulse—the emetic-cathartic solution; after the operation of which—the anodyne antimonial.

14*th.* Restless night—was much purged—cold sweats—burning, acrid heat at the pyloris—pain over the orbits—six gr. of calomel, and one of opium, thrice a day—also the camphor julep every three hours—port wine or porter, as much as he can take—cold ablution—at 6 P. M. symptoms nearly the same—had many fœtid, bilious stools, during the day—spirits greatly dejected—

cold sweats on the extremities—pulse small, quick, and fluttering—tongue brown and crusted—great apprehension of death—bark.

15*th.* No rest all night. This morning, all the symptoms worse.—at 10 A. M. the fatal black vomit has appeared—cold sweats—delirium—omit the bark, which will not lie on his stomach; repeat the calomel—æther and laud. draughts every two hours—evening, the vomiting checked a little—blisters to the head and stomach—skin begins to change yellow—breath becomes fœtid—every symptom unfavourable.

16*th.* No sleep last night—worse in every respect this morning—he sinks hourly—low delirium—muttering—lips and teeth encrusted black—breath fœtid—insensible—lies on his back, mouth and eyes half open—skin intensely yellow—pulse small and fluttering—same treatment.

17*th.* Black vomit all night—cold sweats this morning—tongue black—pulse fluttering—singultus—eyes glassy—breath very fœtid—stools involuntary, and black, like coffee grounds—lies on his back, eyes and mouth half open—carried off, in an attempt to vomit.*

* Will any one assert, after reading this, and many other cases here, that the "*Yellow Fever*" never appears in the East?

CASE XV.

MR. WM. ROWARTH, ASSISTANT-SURGEON.

From Edam.

November 16*th*, 1800. He was employed on duty, at the hospital on Edam Island, where he slept. He returned from the island on the 12th instant, and was this day seized with the Batavian fever. It was ushered in with rigors, giddiness and vomiting, which lasted three hours; a hot fit then came on, which terminated in cold sweats.—The emetic-cathartic solution was taken at the commencement of the attack, and operated both ways—the anodyne antimonial draught at bedtime.

17*th*. Slept none during the night—had severe vomiting. This morning, profuse cold sweats—pain over the orbits and in the epigastrium—breathing short and laborious—great despondency, and dread of dying—effervescing draughts every two hours—drink acidulated—at 8 P. M. skin intensely hot—thirst insatiable—pulse quick and hard—tongue brown and crusted—vitriolic æther draught, with one grain solid opium.

18*th*. Slept a few hours in the night. This morning, some remission of the fever—the decoction of bark every two hours, which his stomach retains—at 8 P. M. quiet and rational—

pain has left his head—calomel, gr. viij; opii, gr. j; hora somni—bark continued.

19*th.* Symptoms as yesterday—promises a favourable result—bark and calomel as yesterday—At 1 P. M. took some fowl-broth, which he relished—his tongue, however, is still brown; at 10 P. M. he becomes restless—cannot lie any time in one position.

20*th.* Had a severe paroxysm of fever last night, ushered in with rigors and vomiting. This morning he is delirious—pulse quick and small—he lies on his back, with mouth and eyes half open—can with difficulty be roused—extremities covered with cold sweats—heat at the epigastrium—eyes glassy—deafness—skin changes yellow—breath becomes fœtid—at 8 A. M. took jalap, ʒj; calomel, gr. viij; ft. bolus.—At 1 P. M. several fœtid stools from the bolus, whose smell was insufferable—prescribed the bark, with port wine—in the evening, the body sponged with vinegar and water—has taken a pint of wine, and six drams of bark, in the course of the day.

21*st.* Symptoms nearly the same as yesterday—he lies in the same state, fœces and urine passing involuntarily—retains the wine and likewise porter on his stomach—bark and wine continued—has no recollection of any person—at 6 P. M. tongue encrusted—breath very fœtid; delirium—talks much—subsultus tendinum—head blistered in the evening.

Endemic of Batavia.

22*d.* Slept a few hours last night—symptoms better this morning—no vomiting—more sensible—some appetite—ate some sago and wine—bark and wine, with porter, continued—at six in the evening becomes restless—all the symptoms exacerbated—black vomit—stools involuntary—skin a deep dirty yellow—fœtid smell from the body.

23*d.* All the symptoms worse, if possible—black vomit incessant—keeps nothing on his stomach—lies on his back, eyes and mouth half open—insensible—hiccup—cold sweats—tongue lips and throat black—death.

N. B. His wife went to sea with him—she too had been on Edam, and caught the fever there. She died with nearly the same fymptoms as those of her husband.

CASE XVI.

FREDERIC CROMPTON, MARINE.

At Sea.

November 14*th,* 1800. Was sent on board last evening from Edam, slightly indisposed—this morning, complains of the usual symptoms of Batavian fever; which was, in this case, ushered in with cold rigors—the emetic-cathartic solution, which operated—the anodyne antimonial at night.

Endemic of Batavia.

15*th.* Passed a restless night. This morning, skin hot—stomach irritable—ipecac. gr. xii—operated both ways—at night, aq. menthæ ℥ij, æther vit. ʒj—twenty drops of the nitrous acid every three hours, in rice-water.

16*th.* Bad night—head and stomach painful this morning—tongue white and furred—the acid through the day—æther draught at night.

17*th.* Nearly as yesterday—same treatment—keeps the acid on his stomach—nauseates the sight of bark.

18*th.* Restless night. This morning, skin intensely hot—small bilious stools—head-ache—calomel, gr. viij; pulv. ant. gr. ij; opii, gr. j; ft. bolus, mane sumend.—in the evening, a dose of magnes. vit.—operated well—more composed—æther draught at night.

19*th.* Restless night—skin intensely hot this morning—thirst insatiable—severe pain over the orbits—tongue foul—calomel, gr. x; rhubarb, ʒß—several bilious, fœtid stools in the evening—at night easier—pediluvium—blisters—draught.

20*th.* Very ill this morning—stomach irritable—fever high—tongue foul—head-ache severe—all other symptoms unfavourable—skin changes yellow—effervescing draught every two hours—a pill of opium and antimony at night—nitrous acid, diluted for drink.

Endemic of Batavia.

21*st.* No sleep last night—vomiting incessant—bowels uneasy. This morning, no better—fever high—stomach irritable—skin yellow; bilious, fœtid purging—burning heat in the epigastrium—head giddy—pulse small and irregular—every symptom unfavourable—in the evening no better—same treatment as yesterday, with nitre and camphor powders at night, also calomel, grs. viij, which produced a diaphoresis.

22*d.* Passed a more quiet night—seems better this morning—an apparent remission of the fever—stomach not near so irritable—calomel, pulv. ant. et opii, ter in die.

23*d.* He is still better to-day—stomach quite easy and retentive—ate some fowl-broth, and drank a glass of wine—I have added the bark to the calomel and antimonial powder—It sits on his stomach—at 8 P. M. becomes restless—frequent vomiting of black, fœtid bile—the bark has done harm—omitted it, and continued the calomel.

24*th.* Restless all night. This morning, all the symptoms are worse—stupor—not sensible when spoken too—great heat at the epigastrium—general inquietude throughout the system at large—pulse irregular—as the evening approached, an exacerbation—omit all medicines except opium and æther, as the stomach will retain nothing.

25*th.* Thirst insatiable—great debility—

bowels uneasy—more sensible than he was last night—at noon, black vomit—skin a bright yellow—cold sweats—hiccup—subsultus tendinum—ate some fowl-broth with a relish—at night, black vomit incessant—opium and æther.

26*th.* Black vomit all night—eyes glassy—skin a dirty deep yellow—convulsive hiccup—death.

He had lived very intemperately at Edam.

The foregoing cases, selected out of an immense number, will be sufficient to convey a very accurate idea of this endemic, and to support the remarks and general description which preceded them. I have exhibited more fatal than favourable terminations; as the former must include the whole range of symptoms, from health to death, and ascertain the inefficacy of measures in which we might be apt to place too much confidence.

It certainly will not be denied, that this is a very interesting and valuable document, as it gives us a much clearer view of the Batavian fever, than any English work in ordinary circulation; accompanied with numerous collateral incidents and observations, that excite reflection, while they strongly rivet our attention.

Endemic of Batavia.

I shall glance hastily at some prominent traits in the character of this fever, with a few remarks on its cause, leaving the reader to form his own conclusions.

In the first place, the great similitude which it bears, in most of its leading features, to the endemic of the West, cannot have passed unnoticed. Independently of the yellow skin and black vomit, they coincide in many minor, but characteristic symptoms; for instance, the mental despondency, amounting to timidity, at the beginning, veering round to non-chalance or apathy, in the progress of the disease.

That fatal lull, and occasional sensation of hunger too, which are so apt to deceive the inexperienced in the Western endemic, frequently appeared in that of the East. Neither would it seem very difficult to account for their discrepancies. For whether we allow that these endemics are solely caused by the local miasmata, or are the bilious remittents of hot climates, aggravated by these invisible agents; still, in either case, as the cause, or combination of causes, must vary according to the nature of the climate and soil, so we cannot expect to have their effects agreeing in every minute particular. Nevertheless, as the operation of these causes on the human frame appears to be nearly the same in all climates, we can clearly discern (in the broad outline of their effects) a strong family likeness through the whole ghastly tribe.

"————————facies non omnibus una
Nec diversa tamen.————————"

Endemic of Batavia.

The opinion that these grand endemics (yellow fever, for instance) are only the bilious remittents of all tropical climates, in a more concentrated state or degree, is founded, I fear, either on superficial observation, or too great a rage for generalising. The bilious remittent may take place an hundred leagues at sea, in consequence of atmospherical vicissitudes acting on particular organs, whose functions were previously disturbed by atmospherical heat. The endemic, on the other hand, is produced by a specific miasm, (witness that of the fatal island Edam) which, independently of all those peculiar states of the air, or the body, requisite for the production of bilious remittent, will, when in a condensed form, kindle up, at any season, and in any constitution, a fever of terrible malignity.

These diseases then, may be often—perhaps generally combined; since their causes acquire force and subside, *pari passu*, and at the same period of the year. But assuredly they are sometimes totally distinct, and quite unconnected with each other.

This reasoning is corroborated by the fact, that time, (for instance, eighteen months or two years in the West-Indies) will accustom the human frame to the action of the febrific miasm, and thereby secure it, generally speaking, from the endemic; but no number of years is a protection from the bilious remittent. Now, if the two fevers differ only in degree, is it not natural to expect that the seasoning would more certainly insure us an immunity from the less than

the greater degree of the endemic? But the reverse is the case.*

The circumstance of the Dutch officers and Malays falling victims at Edam, might seem to militate against this doctrine; but the objection vanishes, when we recollect, that by previously residing in the country, entirely out of the sphere of the local effluvium, they were in reality no more seasoned to it than the English; and the mortality in the garrison proved it. They were in the same situation as the native or veteran West-Indian, who, by spending a few years in Europe, loses his protection against a visitation of yellow fever on his return.

Neither will residence in one tropical climate

* His Majesty's ship Amelia arrived on the West India station, in July 1804. In October following, while cruising off the coast of Surinam, the yellow fever broke out; and during the three days preceding her arrival in Carlisle Bay, viz. 14th, 15th, and 16th October, she buried the surgeon and ten men. On the 17th, the day she anchored, the captain (Lord Proby) and several men died; and in the course of the next six weeks, the fever went through the whole ship's company, of whom thirty-one died at the hospital.

The fever raged with equal violence on shore at Barbadoes, among those troops who had been *from Europe lately*, viz. the royal artillery corps, and 1st regiment of foot. In the family of General Myers, lately from Europe, thirteen out of fifteen died. All this time, however, the *seasoned* troops, and the prisoners of war, were perfectly healthy, or only slightly affected with common bilious remittents.

So, in October, 1808, in ten days after the arrival of the Pompée at Carlisle Bay from England, the yellow fever was general on board, and ran nearly through the ship's company; while all the other ships of the squadron, which had been *more than a year* on the station, were healthy, or had only a few cases of bilious remittent fever.

prove any security against the local endemic of another, as the above circumstances themselves render evident. Thus the crew of a ship, that has been two or three years on the Coast of Guinea, and sails direct from Sierra Leone to Barbadoes, which are nearly in the same parallel of latitude, will be as liable to yellow fever, as if they had sailed from England; while a two years' station in the West Indies would have almost insured a subsequent exemption.

Indeed, the plan of seasoning troops against *yellow fever*, by stationing them for some time previously, at Gibraltar, Madeira, or in the Mediterranean, has completely failed; and how could it be otherwise, if the Coast of Guinea itself is no protection? a melancholy proof of which was exhibited in H. M. S. Arab, in 1807; which ship came from the latter place (where she had been nearly two years) to the West Indies, and suffered dreadfully by the yellow fever.

These facts (particularly the last) must go far to dissolve the theory of the ingenious Dr. Bancroft, who has laboured to prove, that "the se- "curity from the disease (yellow fever) is prin- "cipally derived from the *ability to endure great* "*heat.*" Essay on Yellow Fever, page 265. The dangerous consequences which might obviously result from trusting to such a protection, as well as Dr. B.'s candour and humanity, will induce him to re-consider the subject. The officers and crew of the Arab, on their arrival in Carlisle Bay, considered themselves perfectly seasoned and secure; but on putting to sea, in the course of a month, the endemic broke out with such

violence, that in one week they lost thirty-four men, and were forced to put into Antigua, in the greatest distress.

Dr. Bancroft, indeed, is not singular in his opinion, which appears to be copied from Dr. Trotter [Medicina Nautica, vol. 1, page 336] who has *theorised* widely on a foundation which the foregoing *facts* completely overturn. Dr. T. probably took the doctrine from Dr. Moseley, who tells us, that a seasoning at *Bermudas* will secure us from the yellow fever of the *West Indies*. p. 65. "Let no such plan be trusted."

The locality and range of this febrific miasma, are clearly decided by the Dædalus. Her ship's company breathed the same general atmosphere as the other crews, for months together; but, with the exception of the purser and surgeon, no man belonging to her came within the fatal circle (in the night, at least) though seldom more than two or three miles from its centre. The officers abovementioned exclusively felt its influence, and, like too many others, fell victims to its direful force.

This document furnishes decisive evidence on two points of great practical importance. One is, that even within the limited range of this poison, its power is nearly inert, comparatively speaking, during the day; the other, that when nocturnal exposure has given rise to the disease, it is non-contagious. It is obvious what an influence the certain knowledge of these circumstances must have on our conduct, and to what useful purposes we may apply it.

In this, as in all other violent endemics, the head and epigastric region were, as usual, the

foci of the disease. The inutility, or rather the injury of every other medicine, than mercury and purgatives, was abundantly manifested. But with all due deference and respect for the surgeon, and a proper allowance for the embarrassing situation in which he was placed, I conceive that the first remedy was not applied early enough, or with sufficient boldness; and that the purgatives, through a false fear of debility, were not so frequently administered, as their evident utility warranted.

In the solitary instance where venesection had a trial, the hasty conclusion which was thence formed of its pernicious effects, in consequence of the sudden death and putrescency of the patient, deserves a remark. If the reader will revert to Joseph Hughes, (Case VII) who, after dressing himself in good spirits—going into the boat without assistance—carrying his hammock up to the hospital—retiring to bed, and falling into a sound sleep, was nevertheless found dead in the morning, "his body emitting the most intolerable effluvia;" he will probably agree with me, that had this man been bled on entering the hospital, his death might have been attributed to venesection, with as much *apparent* justice, as any *single* incident could support.

This may serve as a lesson to us, how wary we should be in rejecting entirely a powerful remedy, from solitary or even several failures. For how difficult is it, in such cases, to say with certainty—such is the successful, and such the unsuccessful medicine! The prejudice against bleeding (seemingly justified by this event) was engendered too, by "accounts which had been

read of its bad effects in fevers of the West Indies;"—fevers in which its pre-eminent service is now ascertained beyond a shadow of doubt.* From all these considerations, and from an attentive examination of the symptoms themselves, we may conclude, that venesection deserves a much further and fairer trial in this fever; and I entertain little doubt, that it will be found a powerful auxiliary to the other means of cure.

Of the efficacy of mercury, under all its disadvantages, I need say little. There is the decision of the surgeon himself, who treated nearly 200 cases of the fever—there are specimens of these cases detailed—and there is a strong proof of the dependence placed in this remedy, where we find the surgeon himself confide his own life to its power, when attacked by the fatal fever of Edam. I would, however, recommend it to be used in the early and liberal manner pointed out in the Bengal endemic, with the same attention to intestinal evacuations. The ptyalism should be copious, and more or less of it kept up till strength be completely restored. The cold af-

* What will the reader think of the following passage in a modern publication?—"In such cases as seemed most to require it; (blood-letting) for example, where the patient was young, strong, of a full habit, and lately arrived from Europe; where the pulse was quick and full, the face flushed, with great heat and head-ache; and all these at the beginning of the fever, *bleeding did no good.*" Hunter on the Diseases of Jamaica, 3d edition, page 118. Here is a guide for the young practitioner on entering the tropics!! Compare this with the result of nearly six years' extensive experience in yellow fever, as detailed in the next section.

fusion bids fair, during re-action; and, at all events, cold applications to the head, with pediluvium, will invariably prove serviceable.

The opinion of Dr. Cullen, that the influence of the remote cause ceases when the fever is once formed, is here proved to be not only erroneous, but dangerous. Removal from the sphere of its action, during fever, invariably protracted the fatal catastrophe; and could the patients have been transported quickly into a pure air, while ptyalism went on, they would, in all human probability, have survived, as the surgeon himself believed. Vide Case V.

One remarkable incident remains to be noticed, and cannot have eluded the observation of the reader. I mean the circumstance of the four *mercurial* patients, who resisted the baleful influence of Edam. Such an immunity cannot be attributed to chance. The proofs are both positive and negative. *They, and they only, escaped the fever.* It accords with my own experience; for never have I known a person fairly under the influence of mercury, for the cure of any other complaint, to be attacked either by endemic or contagious fever. I have seen several, who were reduced by long courses of mercury previously, and who had left it off, fall victims to fever and flux; but never during the exhibition of the medicine. So confident am I of this, that were I in a state of ptyalism, I should not fear to sleep on Edam to-night. I should take good care, however, to keep my mouth sore, till I got to a very respectful distance from the fatal spot. We know that a slight, or even a free ptyalism, may be kept up

for weeks together, without any serious injury to health; and if such a state proved a certain antidote (as it did here without doubt) against the most powerful cause of fever that ever, perhaps, had "a local habitation, or a name," the inconvenience of the prophylactic is very trifling, compared with the security it affords. The rationale of the preservative is simple and obvious. If it cure the disease, why not prevent it? Bark was formerly considered capable of both—(witness the peruvian drams that used to be served out to wood-cutters in hot climates); fatal experience has proved it equal to neither! Mercury, by keeping up the action of the extreme vessels on the surface, and in the hepatic system, prevents, what I conceive to be the paramount effects resulting from the application of febrific miasmata—INEQUILIBRIUM IN THE BALANCE OF THE CIRCULATION, AND CONGESTION OR INFLAMMATION IN ONE OR MORE OF THE INTERNAL ORGANS.

Endemic of the West;

ENDEMIC OF THE WEST;

VULGO,

YELLOW FEVER.

Sec. 5.—The following concise, but animated description of the fatal Western endemic, is written by a physician of first-rate talents, lately returned from the West Indies, and now filling an important station in this country. As he had the charge of a public hospital nearly six years in that climate, with the most extensive field for observation, this document will be found highly valuable and interesting.

Although the gentleman's name would add dignity to this publication, I shall at present allow the intrinsic merit of the communication itself, to be its own passport and recommendation; merely observing, that it probably contains *more* useful and practical information on the subject of Yellow Fever, than some modern octavos of the most ample dimensions.

The endemic fever, commonly called the Yellow Fever, certainly excites the first interest, both on account of the mortality which attends

it, and the discrepancy among professional men respecting its nature and treatment. The inhabitants of this island, as well as the other West India islands, are subject to various fevers of the typhoid, catarrhal, or remittent kind. These attack indiscriminately the native or the seasoned European, and are as mild as fevers of a similar type in Europe. But the fatal fever, of which I am about to give some account, for the most part attacks persons from Europe, within the first *year and a half* after their arrival in the country, and more particularly seamen and soldiers.

It generally appears at a certain period of the year, earlier or later, milder or more aggravated, according to the state of the weather during that season. Solitary instances, however, occur at all seasons of the year, when favoured by predisposition, assisted by strong exciting causes. The natives are not entirely exempt, but to them it rarely proves fatal.

This fever is usually ushered in by the sensations which precede other fevers; such as lassitude, stiffness, and pain of the back, loins, and extremities; generally accompanied by some degree of coldness. These are soon succeeded by a severe pain of the head; a sense of fullness of the eye-balls; intolerance of light; skin dry, and imparting a burning heat to the hand; pulse full and quick; tongue covered with a whitish mucus, but often not materially altered from the state of health; bowels bound.

If the patient has been attacked in the night, he awakes with oppressive heat, head-ache,

and the other symptoms of fever, the sensation of cold having passed unnoticed. At other times, after fatiguing exercise in the sun, and sometimes after a hearty meal, the violent headache, and other symptoms of the fever, are ushered in by an instant loss of muscular power, and immediate depression of nervous energy. The patient, as if he were stunned by a blow, falls down, his eyes swimming in tears. In those cases, delirium is an early symptom. In a few hours, the pain of the loins increases, and in aggravated cases, stretches forward towards the umbilicus; the countenance is flushed; the white of the eye as if finely injected by blood vessels, the albuginea appearing through the interstices of the network of vessels, of a peculiar blue, shining, cartilaginous whiteness.

During the first twelve hours, the patient is not particularly restless, enjoys some sleep, and, when covered by the bed-clothes, has partial perspirations on his face, neck, and breast.

About the end of the first twelve hours, there is a great exacerbation of the fever; he becomes restless; the heat and dryness of the skin increase; there is much pain of the eyes and frontal sinuses; the pain of the thighs and legs is augmented; thirst is increased, with a sensation of pressure about the region of the stomach. Nausea and vomiting occur towards the end of the first twenty-four hours. If the fever has not been arrested within thirty-six hours from its commencement, the patient is in imminent danger, and all the symptoms are aggravated; the pulse is strong and full, and pulsation of the

carotids appears distinct on each side of the neck. The skin continues hot and dry; the thirst is increased; there is much anxiety, the patient continually shifting his posture; the urine becomes high coloured; all his uneasiness is referred to his head and loins. A sensation of pain is felt about the umbilicus, when pressed upon; the white of the eye now appears of a dirty concentrated yellow colour, and apparently thickened, so as to form a ring round the margin of the cornea. The blood vessels of the eye appear more enlarged and tortuous; knees drawn upwards to the abdomen; frequent vomiting, with much straining; mucus, and his common drink only, being ejected. Delirium comes on about the end of the second day. There is now a dryness, or slight sensation of soreness of the throat when swallowing; and about this time, an urgent sensation of hunger comes on, and a remarkable want of power in the lower extremities, resembling partial paralysis of the limbs. About this time, also, the pain of the loins is so severe, that the patient expresses himself as if his "back was broken."

The third day, or stage, begins by an apparent amelioration of all the bad symptoms, the vomiting and thirst excepted. The matter ejected has small, membranaceous-looking floculi floating in it, resembling the crust washed from a port-wine bottle. The thirst is now urgent, and there is an incessant demand for cold water, which is almost immediately rejected by the stomach. The heat of the skin is reduced;

the pulse sinks to, or below its natural standard; the patient, for an hour or two, expresses himself to be greatly relieved, and at this time, a person unacquainted with the nature of the disease would have hopes of his recovery. This state, however, is of short duration, and the delusion soon vanishes.—The delirium increases; the matter ejected from the stomach becomes black as coffee-grounds, and is somewhat viscid. Diarrhœa comes on; first green, then black, like the matter vomited. The patient often complains of being unable to pass his stools, from a want of power in the abdominal muscles. There is an acrid, burning sensation of the stomach, and soreness of the throat, extending along the whole course of the œsophagus, in attempting to swallow; eyes, as if suffused with blood; skin a dirty yellow; parts round the neck, and places pressed upon in bed, of a livid colour. Hemorrhage, more or less, takes place from the nose, mouth, and anus, and a deposition of blood from the urine. The delirium becomes violent; the body as if it were writhed with pain, the knees incessantly drawn up to the belly. The patient seizes, with convulsive grasp, his cradle, or any thing within his reach, and prefers the hard floor to his bed. The pulse now sinks; respiration becomes laborious; the countenance collapsed—the lustre of the eye gone.—For some hours, he lies in a state of insensibility before death; at other times, expires after some convulsive exertion, or ineffectual effort to vomit. The tongue, during the whole course of the fever, is but little altered; and if loaded

in the early stages, is clean and florid before death.*

Such is the regular succession of symptoms which characterize this fever, but of longer or shorter duration, according to the violence of the disease, or strength of the powers of life to resist it.

In weakly habits, the vascular action at the beginning is less marked; and in these cases, the fever is generally more protracted, and the patient expires unaffected by the laborious respiration, and convulsive motions, which attend the last struggles of life, in the more violent degrees of this endemic. Very often the patient retains his senses till within a few minutes of his death; and sometimes will predict, with considerable precision, the hour of his dissolution.

In the early stages of the worst cases of this fever, there is much anxiety in the countenance of the patient, who expresses a despair of recovery. This fear does not appear to proceed from any *natural* timidity, but seems rather a symptom of the disease. In the last stage, there is as much *resignation* to his fate, as there was apprehension at the beginning. The fever of the Amelia in 1804, and of the Northumberland and Atlas in 1805, terminated fatally from the second to the fourth day. The fevers of 1807 and 1808, extended from the third day to the fifth. I have never noticed a remission during

* This confirms the observation of Dr. Blane, that in yellow fever, "the tongue is somewhat white and foul, but I do not remember to have seen it black and dry." 3d edit. page 413.

the whole course of the fever. Several cases of remittent fever under my care terminated in the endemic fever.

A certain number of those attacked by this fever, if prompt measures to subdue it had been employed, recovered from its first stage. They exhibited evident signs of amendment within the first twenty-four, or at farthest thirty-six hours, from its first attack. Also, a considerable proportion recovered from the second stage; that is to say, previously to black vomiting unequivocally appearing. But I have only known thirteen cases, in above five years, to have recovered from the last stage. Some of these were afterwards invalided, in consequence of dyspeptic complaints, and generally disordered state of the stomach, and other abdominal viscera.

In these cases, the stomach gradually became retentive; the eyes and skin became of a more vivid yellow; they had refreshing sleeps, but continued extremely weak and languid for a long time. The oozing of blood from the fauces and gums also continued for some days; and the deposition of blood in the urine remained longest; this excretion being always the last to return to its natural healthy condition.

Pain of the back, early stretching round to the navel—soreness in the throat and œsophagus—heat and acrid sensation in the stomach—urgent thirst—hunger—want of power, resembling paralysis of the limbs—violent delirium—despondency—enlargement of the blood vessels, and red-yellow colour of the white of the eye, either singly or collectively, indicate extreme

danger; and when the black vomit has appeared, scarcely a hope remains!

The following were the appearances after death [four cases excepted] in above an hundred bodies which I have inspected.

Omentum a little altered.—Peritoneal coat of the stomach occasionally marked, in a slight degree, by inflammation.—The stomach contained more or less of a viscid, black fluid, such as was ejected by vomiting.—Irregular spots, patches, and streaks of the internal surface of the stomach, in a state of inflammation, gangrene, or sphacelus.—Sometimes large portions of the villous coat destroyed, as if *corroded by some acrid matter.*—The small intestines and cœcum inflated with air, and often containing lumbrici, and a small quantity of dark coloured fœces, were inflamed, and in many places approaching to the state of gangrene.—No marks of inflammation in the colon, but it was singularly contracted.—Lower part of the rectum frequently excoriated—Concave surface of the liver inflamed.—Gall-bladder turgid with ropy bile; and, in some instances, its coats were one-fourth of an inch in thickness.—Other viscera of the abdomen little changed.—In the thorax, the posterior part of the superior lobules of the lungs, generally were very turgid with blood.—Internal surface of the œsophagus, throughout its whole extent inflamed.

In ten cases of a peculiarly aggravated degree of fever, where much delirium had been present, I opened the head. The blood vessels, in some instances, seemed more turgid with blood than usual. In two cases, there were about two

ounces of serum effused into the lateral ventricles; but in five cases the brain did not exhibit any marked appearance of disease.*

The black matter found in the stomach had not the most distant resemblance to bile; but evidently was blood poured into the stomach from the relaxed vessels, or excoriated and gangrenous surfaces, altered by the vitiated secretion of the gastric fluids.

Europeans, within the first eighteen months after their arrival in the country, being almost exclusively obnoxious to the yellow fever, it is natural to suppose, that there is something in the European constitution, favourable to the morbid motions which constitute this fever; and that this peculiar habit consists in a disposition to take on inflammatory action. Persons seasoned to the climate, and even natives, by sudden alterations in their mode of life, sometimes acquire this predisposition. Young people born in the West Indies, and educated in England; and persons having resided some years in England, after they had passed the greatest part of their lives between the tropics, are liable to this fever on their return to the West Indies.

This disposition is excited into action by a variety of causes; the chief of which are—intemperance; excessive fatigue in the sun; perspiration checked, by being exposed to a current of air, or sleeping exposed to the dews; costiveness, &c. &c. &c. In fact, whatever becomes an exciting cause of fever in any country, is

* What will Dr. Clutterbuck say to this?

or, Yellow Fever.

equally so in this; but unfortunately it is not the same fever that is induced.

It has been observed, and very frequently urged by the *bon vivant*, as an excuse for his mode of life, that men who live in the most temperate manner, are as liable to fever, if not more so, than those who follow the opposite extreme. There is an appearance of truth in this remark. Often, very often, the temperate and sober are seized with this fever, under circumstances where the drunkard escapes.

A stranger, on his arrival in the country, unless possessed of more than ordinary resolution, is assailed by so many temptations, that he has not the power to follow the plan he may have laid down for his own regulation. He commits an *occasional* excess, and next morning awakes in a high fever; while the man accustomed to his "*musquito dose*," probably feels no uneasiness, or, if he has a slight head-ache from his last night's debauch, flies for relief to his hot punch or sangaree. The more temperate and regular a man has lived, any deviation will become, in a proportionate degree, a stronger exciting cause of fever.* But if the drunkard and the sober man should be attacked with fever, the former has not an equal chance of recovery with the latter.

Contagion, as a source of this fever, is entirely

* This is no argument against temperance; it only proves that its breach is more dangerous to the regular liver than to the debauchee.

rejected by those professional men who have the greatest opportunity of information, now resident in the West Indies. No case occurred, where the fever could be traced to a contagious source. In the very first stage of this fever, it would probably be difficult to distinguish it from the other continued fevers of the country. Its violence is one criterion, by which we might form a judgment. We must also look to the particular circumstances of the person attacked. —If he has been but a short time from Europe; —if he has been taken ill after a debauch—fatigue—or unusual exposure to the sun, or to a partial current of air, or after sleeping in the night air, there is much reason to apprehend yellow fever; more particularly if the eyes be inflamed, and the pain of the loins stretches forward to the navel; with soreness of the throat —heat, and acrid sensation in the stomach; a feeling of pressure there, and urgent desire for cold drink. These, and the other symptoms already described, will indicate the nature and the danger of the disease.

Bleeding largely, in the early stage of the fever, has been found of the most eminent service. When employed after the first stage of the fever had passed by, it did injury, and certainly hurried on dissolution. The following plan is that which has been pursued at this hospital, for several years; it is that which has been practised by many of the naval surgeons on this station, and has been attended [would I could say with uniformly the happiest effect!] with at least superior success to that of any other,

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From twelve to twenty-four ounces of blood and upwards, are drawn from the arm, as soon after the accession of the fever as possible. The blood should be drawn until derangement of the vascular action has taken place, by the quantity of blood extracted; indicated by approaching syncope, nausea and vomiting. Should fainting come on, from mental emotion, such as the dread of the lancet, sight of the blood, &c. &c. the bleeding is to be continued after the patient has revived, until a quantity proportioned to the strength is drawn off. Six grains of calomel, and double that of cathartic extract, are to be immediately given; and if this medicine does not operate in three hours, it is to be repeated. At the end of six hours, if the purgative has not yet had effect, it is to be assisted by an enema; and either an ounce and a half of sulphas magnesiæ, vel sodæ, or half a drachm of jalap, with an equal quantity of cremor tartar, are to be given.

In eight hours after the patient has been blooded, six or eight full, copious evacuations should be procured.

During this time, if the skin be hot and dry, the cold affusion is to be employed every two hours. Partial perspiration, in the early stage of the fever, should not deter from its use. *The greater the force with which the water is applied, the more benefit is to be derived from it.* When there is much pain of the head, the hair is to be shaved off. Thus the treatment, during the first twenty-four or thirty-six hours, consists in one full, large bleeding—purgatives, so as to procure several copious alvine evacuations—the cold

affusion *—shaving the head; and the liberal use of barley-water, or any other weak drink.

Under this plan, fifty patients out of one hundred, attacked by the genuine endemic fever, will shew evident signs of amendment within the above-mentioned period. A general perspiration, not profuse, will break out; the heat of the skin will be reduced; head-ache, and pain of the thighs and legs will be abated; the red vessels in the white of the eye will disappear; the thirst will be lessened; and, in short, all the feelings of the patient will become more agreeable. From this state they recover with extraordinary rapidity. In one week they are restored to perfect health.

If this favourable change does not take place within the period alluded to, there is much danger. The patient becomes restless; the sensation of pain is more acute; delirium, vomiting, and other bad symptoms succeed. In this stage, the bowels are to be kept loose—two or three stools are to be procured every twenty-four hours, by calomel, given in four grain doses, three or four times a day, as the state of the bowels may indicate. The cold affusion is to be continued, lessening the force with which the water is applied, as the vascular action and heat diminish. If delirium and vomiting are present, blisters are to be applied to the head and nape of the neck. Before the heat is reduced, and the vascular action brought down to its natural standard, stimulants are employed;

* The vapour bath, now coming into use at the naval hospitals abroad, bids fair to prove a powerful auxiliary in soliciting the blood to the surface, and thus relieving the internal organs from the effects of CONGESTION.

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such as wine, at first in small quantities, gradually increasing it; capsicum, in the form of pills. If the patient has been much addicted to spirits, toddy in lieu of wine is to be allowed; but the stimulant from which I have observed the greatest benefit, is the carbonate of ammonia, in doses of six or eight grains every two hours, with small doses of the nitrous æther, diluted with water. When vomiting is urgent, the patients are to be restrained from drinking much; and when the stomach is empty, more benefit is derived from two table spoonfuls of arrow-root every half hour, than from any medicine I have known. Vitriolic æther, and even ardent spirits, to restrain vomiting, as the heat and vascular motion subside, have been taken with partial relief.

This state may continue for two days, or even longer, before there is any remission. The first favourable symptom is usually a refreshing sleep, and the absence of delirium. A warm and moderate perspiration covers the surface; and if the skin and eyes have been yellow, the colour becomes more bright.

Convalescence from this stage of fever is much more slow than from the first. Much attention to the state of the bowels, and the liberal use of the decoction of bark, with vitriolic acid, if there be much oozing of blood from the gums and fauces, are necessary. From that stage in which the black vomit is the prominent symptom, few—very few recover. Dark-coloured fluids, however, have been often taken for black vomit, where the latter did not exist, and thus nurses, and even medical men, have been deceived. All the cases that recovered at this hospital, were certainly unex-

pected. This dreadful symptom had continued in all of them above twelve hours; oozings of blood from various parts, stools black as ink, &c. &c. were present. The first sign of amendment was the stomach becoming retentive, and the enjoyment of a few hours sleep. The yellow colour of the eyes and skin became daily brighter, till at last the patient had the most perfect jaundiced look; the colour of the stools keeping pace with that of the eyes and skin. The stimulating plan of treatment, after full and copious evacuations in the early stage of the disease, was gradually begun with these patients long before the vascular action had been reduced to its natural standard. Wine frequently, and in small quantities—the carbonate of ammonia—capsicum, with arrow root, were assiduously administered; and whenever the appetite of the patient craved for brisk porter, spruce beer, &c. they were never denied; but these and other drinks were given in small quantities at a time, as larger caused instant vomiting.

Relapses from this fever frequently terminate fatally. Want of appetite, and sensation of fulness at the stomach, usually precede the common train of symptoms. In these cases, I found an emetic give instantaneous relief. The patient generally vomits a large quantity of æruginous-coloured matter, and the evacuation is attended by immediate ease: two or three drachms of the tartarized antimonial wine (Edin. Phar.) are generally sufficient for the purpose. In the *usual* practice of the hospital, emetics are omitted, because they often delayed the exhibition of brisk purgatives, which are required to move the bowels in this fever. But there is one form of the endemic com-

mencing with diarrhœa, and sometimes dysenteric symptoms, in which emetics are employed with advantage. When the fever, however, commences in this way, it is less dangerous, though more protracted, than where costiveness and torpidity of the bowels attend.*

In this, as in other diseases, anomalous symptoms will occasionally occur, requiring slight modifications of treatment; but these can only be learnt at the bedside. On this account, I forbear to enumerate ladanum, æther, ginger-tea, effervescing draughts, champaigne, &c. which in high practice are sometimes prescribed. The practice of applying powdered capsicum to the raw surfaces of blistered parts, by way of counter-irritation, had nearly become fashionable from its novelty; but this barbarous practice, I believe, is nearly laid aside. I may mention, though out of place, that the actual degree of heat, as indicated by the thermometer, is not proportionate to the intensity communicated to the hand. The heat generally varied between 99° and 102°, very seldom exceeding 103°; yet the same imparted a burning caustic sensation to the hand at these times."

This ingenious and experienced physician does not suppose a residence in other hot climates to be any effectual security against the endemic of the

* "The most favourable cases of the yellow fever, are those "in which a bilious diarrhœa comes on; while the most "fatal are those in which the bowels are so torpid as to be "insensible to any stimulus, either from their own contents "or from medicine." Blane, 3d ed. p. 450.—Vide last section, page 209.

Endemic of the West;

West Indies. Several regiments, which had been a considerable time at Gibraltar, and were afterwards sent to the West Indies, in 1795, were cut off, almost to a man, by the yellow fever; and ships from the Coast of Africa (for instance, the Arab in 1807) were depopulated with as much rapidity as if they had come from England. This proves what I have before remarked in the Batavian endemic, that nothing but being habituated to the *local* miasm, can secure us from the *local* fever, however theorists may generalise or identify the remote causes. He concludes with this observation: "It is probable that as many lives "have been lost by the *temerity* of men who have "resided in *other* hot climates, as by the *timidity* "of those direct from England."—This sentiment from *experience*, will outweigh a volume of eloquence from theory. He considers the climate as unfavourable to European constitutions, especially when they approach it after the age of puberty; though by proper prophylaxis, they might avoid or greatly mitigate the diseases of the country.

The following are his directions, as far as concerns the navy:—

"When a ship from England approaches the land, the crew should have their allowance of spirits diminished, and spruce beer, or other light beverage, substituted in lieu thereof; and on her arrival in port, the utmost vigilance should be used, to prevent the introduction of liquor by bum-boat women, or boats' crews. The surgeon should cause every individual in the ship, to take a purgative medicine once a fortnight or oftener, for the first twelve months. The men

should not be employed unnecessarily in the sun, for the first year after their arrival in the country; nor at any time be permitted to work exposed to his direct rays, between the hours of ten in the morning and two in the afternoon. The dockyard and watering duty should not be performed by any but those accustomed to the climate—a corps of blacks for that purpose, would save a great waste of lives. Ships should remain as short a time as possible in port; and between the months of July and December no ship should be permitted to refit, or stay more than a day or two in harbour, except in cases of absolute necessity. Where great repairs are wanting, the ships should be sent to Halifax, or even to England.

Government should so arrange the navy, that ships might not be kept more than twelve or eighteen months on that station; the seamen would then come to the West Indies with cheerfulness, and submit to privations without repining, when they knew the utmost limits of their sufferings. By these means the men would not remain long enough in the country to acquire a *predisposition to dysentery* and ulcers, which they inevitably do by a longer residence. Grog-shops in the vicinity of dockyards should be prohibited by the interference of the colonial legislature. Cleanliness, dryness, and ventilation of the ship, as well as personal cleanliness, should be more particularly attended to than in Europe.

Finally, the refitment of ships should be more consigned to Carlisle Bay than Antigua Harbour. Probably there is no island in the West

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Indies where there is a greater degree of health than in Barbadoes; and although Bridgetown and its neighbourhood is the most unhealthy part, yet I am so persuaded of its superior salubrity, that I would venture to assert, that five ships of the line, lying three months in Carlisle Bay, would not send a *sixth* part of the number of sick to the hospital, that would be sent, under similar circumstances, from an equal number of ships at Antigua."

Hepatitis.

HEPATITIS.

Sec. 6.—"The exclusive efficacy of mercury," says Dr. Saunders, "in liver-diseases of the "continent of India, may perhaps be explained, "by supposing they arise from an *indigenous* "*and local poison, or miasma*, peculiar to that "country, unlike any thing known in any other "part of the world, even under similar latitudes "and temperatures."

Had this ingenious and deservedly eminent physician ever visited the continent alluded to, his penetration would have discovered the cause of this phenomenon, without the aid of an "indigenous poison," which, like the introduction of an epic divinity, is a more poetical than philosophical mode of extricating ourselves from difficulties, and *loosing* the gordian knot.

In order to clear the way for this investigation, it is necessary to inquire, whether this "endemic of India" be equally prevalent in all parts of that vast empire. Here universal evidence gives the negative; and every one, in the least acquainted with the medical topography of the country, knows, that genuine, or ideopathic hepatitis, is ten times more prevalent on the Coast of Coromandel than on the plains of Bengal; while, on the other hand, intermitting and remitting fevers are ten times more nume-

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rous in the latter than in the former situation. Let us next see, if there be any particular difference in the climates and temperatures of these two places. By exact thermometrical observations made at Calcutta, by Mr. Trail, during a whole year, the following appears to be the monthly medium heat of three different diurnal periods—morning, noon, and evening.

TABLE.—No. I.*

January	66°	May	84°	September	82½°
February	74	June	83	October ..	82½
March	79	July	83	November	76
April	86	August	82	December..	68

Annual Average, 78½ Fahrenheit, 1785.

Let us compare this with the heat at the presidency on the coast.—The following is copied from the Madras gazette, shewing the state of the thermometer at the Male Asylum, during one week in July 1804, which was by no means remarkable for any extraordinary range of temperature.—

* Vide 2d vol, Asiatic Researches.

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TABLE.—No. II.

State of the Thermometer at the Male Asylum, Madras.

1804.	7 A.M.	Noon.	3 P.M.	8 P.M.	Average	Remarks.
July 11....	81	88	89	85	86	
12....	81	88	90	86	86¼	"The thermometer is placed in a room moderately exposed to the weather, and facing the north-west.
13....	81	91	92	86	87½	
14....	82	90	93	84	87¼	
15....	83	91	94	88	89	
16....	84	92	95	91	90½	
17....	85	94	96	91	91½	
Total Average, 88½.						

Now it is well known, that, excepting for a few weeks at the change of the monsoon, in October and November, the Coromondel Coast is remarkable for a cloudless sky and steady temperature, all the year round;—the heat, however, being often above the specimen exhibited, as the following table from Dr. Clark will shew.

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TABLE.—No. III.

State of the Thermometer on board the TALBOT *Indiaman, in Madras* Roads, *from the 24th July to the 23d August,* 1771.

Month.	Day.	Hour.	Ther.	Month.	Day.	Hour.	Ther.
July	24	12	90	August ..	8	7	96
		6	96		9	12	89
	25	12	88			4	87
	26	12	90		10	12	93
		3	93			4	88
	27	12	90		11	2	94
		3	93			4	89
	28	12	90		12	12	93
		3	92			4	90
	29	12	93		13	12	90
		4	96			4	87
	30	12	90		14	12	89
		4	94		15	12	89
	31	12	91			3	90
		4	93		16	12	90
August ..	1	12	93			4	94
		4	94		17	12	94
	2	12	92		18	12	93
	3	12	90		19	12	90
		3	91			4	87
	4	12	90		20	8	90
		4	92			3	94
	5	12	92		21	8	92
		4	94			3	95
	6	12	89		22	11	94
	7	12	90			4	87
		5	92		23	10	86
	8	12	93			3	88

Total Average, 91°.

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Dr. Clark remarks that, "on account of the sandy soil at Madras, it was found moderate enough to allow a thermometer to rise six or seven degrees higher ashore." This would make the average, for a month in succession, 97 or 98°.—Vide Clark on Long Voyages, page 56 et seq. Mr. Curtis, speaking of the Coromandel coast, where he remained on shore more than a year, observes—"Except for two or three weeks about the shifting of the monsoons, especially that which happens in the month of October, a shower of rain, or a breeze of wind, are (is) almost unknown; scarce ever a haze or cloud appears upon the horizon, to mitigate the dazzling ardour of an almost vertical sun; and the thermometer, through *the whole twenty-four hours*, seldom or never points under 80° of Fahrenheit, but generally *far above it*." Introd. p. xvii. How far above 80 it generally points, the preceding tables will clearly evince.

The nature of the soil is such, that while the sun is above the horizon, it acquires a much superior degree of temperature to that which the plains of Bengal attain; in consequence of which, the nights are often hotter than the days, when the land-winds prevail in May, June, and July. I have seen the thermometer stand at 105° of Fahrenheit, at *midnight;* and that too on board a ship riding at anchor in Masoolipatam Roads. Many causes combine to produce so much higher a range of atmospherical heat in the Carnatic than in Bengal. First, the coast in question trends away towards the equinoctial line, while a great part of Bengal lies *without*

the tropics. Secondly, the soil of the former is gravelly or sandy, and vegetation stunted; whereas that of the latter is clayey, aud vegetation luxuriant. Thirdly, the periodical rains that fall, at the change of the monsoon, on the coast, are instantly absorbed by the parched and sandy surface, affording only a very temporary coolness to the air; while an actual and extensive inundation covers Bengal for months together. If, therefore, the nocturnal temperatures of the two places were blended with the diurnal —if, for instance, the thermometer were marked every hour at Madras and Calcutta throughout the year, and the whole averaged, there would be full *ten degrees difference* in the annual mean temperatures of the two presidencies. Bombay is nearly on a par with Calcutta; for although the country surrounding the former is neither flat nor inundated, as in Bengal, yet its northern parallel of latitude, its insular situation, and the mountainous nature of the adjacent country, combine to render the average annual temperature of Bombay as low, if not lower, than that of Calcutta.*

An important, yet unnoticed circumstance, remains to be considered, in estimating the comparative influence and effects of the two climates.

Although *sudden* vicissitudes of temperature are highly injurious to the constitution, in general, and to the hepatic system in particular; yet

* Vide Dr. M'Gregor's Memoir, Edin. Med. and Surg. Journal.

an *annual* change is eminently beneficial. Thus, the first table shews us, that at Calcutta, during four months of the year, viz. November, December, January, and February, the average heat of the day is only 71° Fahrenheit, five degrees *below* the common summer heat of England. As for the nights, I can vouch for their being cooler than summer nights at home; since a hoar frost is not an unusual sight on the plains of Bengal, in the mornings of this period; and very gratifying have I found the heat of a blanket at Calcutta in the month of December.

Thus the Bengalese, and those in similar parallels of latitude, enjoy a kind of *tropical winter*, or exemption from high ranges of temperature, during *one-third* of the year; the effects of which, in relieving the hepatic system from excessive action,—in bracing the whole frame, relaxed by the previous heats, and preparing it to sustain the subsequent ones, may be compared to a short return to our native skies.

This remark will be confirmed by the following analogical observations of Dr. Darwin. "Though all *excesses* of increase and decrease of stimulus should be avoided, yet a certain *variation* of stimulus seems to prolong the excitability of the system: thus, those who are *uniformly habituated to much artificial heat*, as in warm parlours in the winter months, lose their irritability, and become feeble, like hot-house plants; but by frequently going for *a time* into the cold air, the sensorial power of irritability is accumulated, and they become stronger. Whence it may be deduced, that the *variations*

of the cold and heat of this climate (England) contribute to strengthen its inhabitants, who are more active and vigorous than those of either much warmer or much colder climates." —Zoonomia.

Knowing then, as we do, how uniformly a high temperature affects the biliary organs, and keeping the foregoing facts in view, can we be at a loss to account for the greater frequency of genuine hepatitis in the Carnatic, than in Bengal?—I say genuine, or original hepatitis; for most of those cases which we meet with at the latter place, are the consequences, or sequelæ, of repeated intermittents and remittents, both marsh and jungle.

The same reasoning applies to Bombay, and and all other parts of India, whose distance from the equator produces a *tropical winter,* when the sun is near Capricorn; or where peculiarity of soil, elevated situation, or other locality, is incompatible with that high, and almost unremitting range of temperature, so remarkable on the Coromandel coast, and so fully adequate to the derangement of the hepatic functions.

Having thus explained, in I trust a satisfactory manner, the nature of this "local poison," and how it comes to operate more forcibly in one part than another of the Indian continent, it is necessary to shew why, even in the less sultry parts of the latter—for instance, Bengal, the complaint is still more prevalent than under similar latitudes in the West.

Dr. Saunders quotes, in support of his hypothesis, the following observation from Hunter on the Diseases of Jamaica. "It is a remark-

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" able thing," says the latter, " that in the East " Indies, under the same latitude *nearly* as Ja- " maica, that is, at *Madras and Bombay,* the " disease known in those countries by the name " of Liver, or Hepatitis, shall be the most pre- " vailing disorder among Europeans, and that " the same should not be known in the Island " of Jamaica." In the first place, there is a geographical error in classing Madras and Bombay in similar latitudes. In the second place, I assert, that there is a difference of ten degrees in the annual mean temperatures of the two places, taking the *hourly average height of the mercury, by day and by night, throughout the year.* In the third place, hepatitis is by no means the most prevailing disease among Europeans at Bombay; dysentery being infinitely more common.* But further, the Island of Jamaica, from its situation in the vicinity of Cancer, must have its " tropical winter," as well as Bengal, and at the same period; while its insular nature, and distance from the American continent, insure it the advantage of sea and land breezes,—the *former* coming in *cool* and refreshing, in every direction, from the sea by day; the latter descending *cold* from the blue mountains by night.

On the contrary, in Bengal, the land-winds are so distressing in April and May, as to oblige

* If I afterwards trace a connection between dysentery and deranged hepatic function, it will not invalidate this position; as the same observation will apply to the dysenteries of the West.

the Europeans to sit behind tatties, for weeks together, to avoid being stifled with heat and dust. It is far otherwise in the West. Indeed it is computed by Dr. Mitchell, after thirty years observation, that it is as hot in the countries of the old continent, in latitude 29 or 30, as in the countries of the new continent which lie in 15 degrees of latitude. M. de Paw makes the difference between the old and new continents, in respect to temperature, amount to 12° of the thermometer.—Recherches Philosophiques.

"The vernal season in these parts," [West Indies] says Mr. Edwards, "may be said to com-
"mence with May. The parched Savannahs
"now change their aspect, from a withered
"brown to a fresh and delightful green. Gentle
"southern showers presently set in, which, fall-
"ing about noon, occasion bright and rapid ve-
"getation. At this period, the medium height
"of the thermometer is 75°. After these ver-
"nal showers have continued about a fortnight,
"the season advances to maturity, and the *tro-*
"*pical summer* burns in its full glory. During
"some hours in the morning, before the sea-
"breeze has set in, the blaze of the sun is fierce
"and intolerable. But as soon as this agreeable
"wind arises, the extreme warmth is abated,
"and the climate becomes even *pleasant* in the
"shade. The thermometer now stands gene-
"rally 75° at sunrise and 85° at noon.*

* Compare this with table No. II.—85° in the morning, 96° at noon.

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"But whatever inconvenience the inhabitants "of these islands may sustain from diurnal "heat, it is amply recompensed by the beauty "and serenity of the nights: the moon rises "large and refulgent in the cloudless horizon "—the landscape is fair and beautiful—*the air* "*cool and delicious.*

"In November or December the north winds "commence; at first attended with heavy *show-* "*ers of hail,* till at last the atmosphere bright- "ens, and the weather, till March, may be called "*winter.* It is a winter, however, remote from "the horrors of northern severity:—*cool, whole-* "*some and delicious.*" History of the West Indies.

Let this description be compared with that of the Coast of Coromandel, and we shall see how easy it is to make a sweeping classification of climates on paper, where little similarity exists in nature.

To return. The average thermometrical range of heat ought to be, and really is, lower at Jamaica by three degrees than either at Bombay or Calcutta; and if so, how much lower than at Madras? In Jamaica, too, though the rainy season may leave swamps and marshes at the debouchures of rivers, yet there is nothing like the great annual inundation of Bengal, occasioning such numerous intermittents, that too frequently terminate in hepatitis.

Here, then, are the real causes why the last-mentioned complaint is more observed, and indeed more prevalent, in the East than in the West; viz. the great superiority of temperature on the Coromandel coast:—and the frequency

of intermittents and remittents in the marshy plains of Bengal, or woody and jungly districts of other provinces, as well as of Bombay and Ceylon. To which may be added, the more sudden and extensive transitions of temperature, which take place on the continent of India, than in the islands of the West, owing to the greater degree of equilibrium preserved in the latter places by the surrounding ocean.

After reading the foregoing extract from Mr. Edwards, what will be thought of the following *accurate* thermometrical observations of Dr. Hunter?—"In Jamaica, the *coolest* month in "the year is at least *twelve degrees* hotter than "the *hottest* month in our summers." page 174, 3d ed. Now the *common* summer heat of England is 70°; consequently the thermometer must stand at 88° in the "*coolest month*" at Jamaica; and that too when there are even "showers of hail," and when the weather is "cool, wholesome, and delicious!" Let us compare this with Dr. Blane's account of the West India temperature.—"The thermometer stands very com- "monly at 72°, at sunrise in the cool season; "rising to 78° or 79° in the middle of the day. "In the hot season, the common range is from "76° to 83°. It seldom exceeds this in the shade "at sea, and the *greatest* height at which I ever "observed it in the shade, at land, was 87°." Diseases of Seamen, page 12.

In a very interesting "Account of Jamaica," published in 1808, by a gentleman twenty-one years resident at that island, it is distinctly stated that "the medium temperature of the air may "be said to be 75° of Fahrenheit." page 21.

Hepatitis.

In the very same page, with the most unparalleled inconsistency, Dr. H. contradicts his own statement. "It was *hotter*," says he, "than "common in the month of June, by *three or four* "*degrees*, the thermometer rising many days to 90°, an *unusual* heat in that climate." If we take "three or four degrees" from 90°, we shall have 86° or 87°, what Dr. Blane states for the month of June in Jamaica, whereas, he just before made the heat 88° in the "*coolest* month in the year," which is nine or ten degrees too much.

From these accurate data, Dr. H. proceeds to draw an important inference in Dysentery, of which, however, at present, "it is not my hint to speak." I may here remark, that it must have been from *data* similar to the above, that Dr. H. drew another conclusion—namely, that atmospherical heat has no effect in increasing or deranging the biliary secretion. page 277. I believe he would find it difficult to shew any other authority than his own assertion for this opinion; and therefore I do not mean to throw away many words in confuting it. I shall merely place his opinion in juxta-position with that of his friend who quotes him.

Dr. Hunter.

Hepatitis.

Dr. Hunter.

"A warm climate, it is alleged, increases the secretion of bile, and renders it more acrid. There does not appear to be the slightest foundation for this assertion." p. 277

Dr. Saunders.

"Such symptoms as I have now enumerated (viz. increased and vitiated secretion of bile) are the spontaneous effects of a warm climate on healthy constitutions, independently of any intemperance." On the Liver, p. 159.

Every author with whom I am acquainted, and every one who has observed, or felt the effects of warm climates on his own constitution, will agree with Dr. Saunders.

Lastly, notwithstanding Dr. Hunter's assertion, that "Hepatitis is unknown in Jamaica," when we see so many sallow complexions—emaciated dysenterics—nay, obstructed livers, every day returning from the West Indies; when we hear Dr. Moseley, who practised twelve years in Jamaica, assert, that in hot climates a sound liver is never to be expected after death; and Dr. Thomas, another West India practitioner, make use of these expressions—"My own observations, during a practice of *many years* in the West Indies, where Hepatitis is a *frequent* occurrence," &c. &c. [Modern Practice of Physic] we may safely conclude, that in the endemic fevers, &c. of both hemispheres, the hepatic system suffers proportionally in Port-royal harbour, or the vallies of St. Domingo, as well as on the banks of the Ganges, or in the forests of

Hepatitis.

Ceylon. Indeed, Dr. H. himself admits, that enlarged and obstructed livers are frequently the sequelæ of intermittents in Jamaica.* Such, it is well known, would obtain the appellation of Hepatitis in Bengal; but Dr. H. will not allow the term, because, forsooth, these affections of the liver are not very apt to run into suppuration. Many people, indeed, cannot be persuaded that the hepatic functions are at all deranged, unless Hepatitis, *in propria forma,* be present.—Is the stomach never disordered except in *gastritis?*

Having ascertained the *quo*, we now proceed to the *quomodo.*

I have more than once in this essay alluded to a sympathy, or synchronous action, subsisting between the extreme vessels on the surface of the body, and those of the vena portarum in the liver; a sympathy which, as far as I am acquainted, has not been noticed by any other; and which, if proved, will account for the increased secretion of bile in hot climates, and lead to important practical conclusions. It is, however, in those climates alluded to, where the vessels in question are more violently stimulated than in Europe, that we can most easily and distinctly trace this sympathy. I have remarked, that when we first arrive between the tropics, the perspiration and biliary secretion are both *increased;* and that, as we become ha-

* It is remarked, that Creole children in Jamaica are subject to liver complaints.

bituated to the climate, they both *decrease, pari passu.*

It is very singular that the accurate Bichat should not only have overlooked this circumstance, which is evident to the meanest capacity, but advanced a doctrine quite the reverse. "A cold atmosphere," says he, "confines the "functions of the skin, and occasions those of "the mucous system to be proportionally ex- "tended. The internal secretions are more "abundant," &c. And again. "In warm sea- "sons and weather, on the contrary, the skin "acts more powerfully, and the secretions, par- "ticularly the urine, are diminished." Anatomie Generale. This is all right, had he excepted the biliary secretion, which follows a law diametrically opposite to this; viz. it is *increased* by a warm, and *diminished* by a cold atmosphere, in the same manner as perspiration.

I have likewise shewn that in the cold, hot, and sweating stages of fever, the two processes are exactly simultaneous and proportionate.

The *partial sweats* that break out towards the termination of the hot fit, are accompanied, as Dr. Fordyce remarks, with "*partial secretion*, and irradiations of heat arising from the præcordia." I shall now proceed to other examples illustrative of this sympathy. The Asiatic and African, though inured from their infancy to the high temperatures of their respective climates, guard, nevertheless, against *excessive* perspiration, and its too frequent consequence, *suppression*, by keeping the skin soft and unctuous, whereby they maintain an *equable* flow both of

perspirable matter and bile. The *former* is evident to the senses; the *latter* is proved by the regularity of their bowels, and their general exemption from bilious or hepatic diseases. "The use of oil," says Dr. Currie, "instead of clogging the pores, keeps the skin moist; and while it guards against *excessive*, promotes moderate and *necessary* perspiration."—279. In our own climate, the gentle diapnoe, or insensible perspiration of *mild weather*, coincides with the regular biliary secretion; while it is in August, when the perspiration is most in excess, that we see cholera morbus, and greatly increased secretion of bile.

Bichat ascertained, by direct experiments, that during the time of digestion in the *stomach*, the pyloris is closed, and the biliary secretion *diminished*. We know that a corresponding heat, dryness, and constriction on the surface of the body, are observable at this period. On the other hand, he found that, whenever the chyme began to pass into the duodenum, the biliary secretion was rapidly augmented. We know that, at this very time, the surface relaxes, and the perspiration is increased. Every one knows the effects of emetics and nauseating medicines on the skin and perspiration: the same effects are produced on the biliary secretion. "In all cases," says Dr. Saunders, "where bile is secreted in *too large* a quantity, the use of emetics is improper; indeed, the actions of nausea and vomiting *increase* its secretion," p. 176. This sympathy is equally visible where the secretion is deficient.

Hepatitis.

If we observe those emaciated objects returning from the East and West Indies with indurated livers, sallow complexions, torpid bowels, and paucity of biliary secretion, we invariably find the skin dry, constricted, and harsh to the feel, without any thing like the softness and moisture of health.

In *diabetes*, where perspiration is notoriously defective, there is the most decisive evidence of diminution in the biliary secretion. "There are, perhaps, few cases of diabetes," says Dr. Watt, "without some affection of the abdomen, particularly in the epigastric region." p. 47. "Some morbid change," says the same accurate observer, "in the alvine excretion *always* accompanies the diabetic habit. *Costiveness* is perhaps the *most common* of these. In some instances the bowels have been so remarkably torpid, that even the most powerful medicines, in uncommonly large doses, produced but trifling effect." And, speaking of Stevenson's case, he says, "the quantity of alvine excretion was inconsiderable; it had also an *uncommonly white* appearance."—These facts speak for themselves.*

In chlorosis Dr. Hamilton observes that—"the perspiration seems to be checked"—and "I am persuaded," says Dr. Saunders, "that "in chlorotic habits, the bile is more insipid—

* Are not the kidnies irritated by the non-secreted bile, (or rather the elements of bile floating in the circulation) into inordinate action, in diabetes? Are not the effects of bleeding and mercury thus explained?

" *is secreted in less quantity,* and of a paler co-
" lour than in health." p. 232. " In maniacal
" habits," continues the last-mentioned author,
" there is generally a *defect* in the secretion of
" bile." I need not say how marked is the dry, rigid skin, and deficient perspiration, in most maniacs. " Sea-sickness," says Dr. Saunders, " and a sea-voyage, contribute very much to " *restore the secretion of healthy bile.*" The well-known effect of these in determining to the surface, and promoting perspiration, especially that gentle diapnoe, corresponding with healthy secretion in the liver, need not be insisted on. The torpid state of the skin in melancholia, hypochondriasis, and most nervous disorders, exactly coincides with that of the liver and bowels in the same. " Hypochondriacal complaints," says Dr. Saunders, " are always attended with " dyspepsia and diminished secretion, with great " torpor of the alimentary canal."—192. And again, " The symptoms of dyspepsia and dimi-
" nished secretion, which are now rendered more
" conspicuous among females, from their seden-
" tary life, are most effectually removed by the
" means suggested."—viz. sea-sickness and a sea voyage, the very surest means of keeping up a regular and healthy discharge from the pores of the skin.

The same may be said of exercise, which powerfully promotes the secretion of bile as well as perspiration.

There is a curious case related in the Edinburgh Medical and Surgical Journal, vol. 2, page 5, where an obstinate dyspepsia [where bile is known to be deficient] could not be cured

till the exercise [broadsword] brought on a copious flow of perspiration. In cases of deranged structure and deficient secretion in the liver, Dr. Saunders recommends, what certainly will be found very useful—"the tepid bath, and small doses of mercury."

Here the bath must act first on the skin, and probably on the liver, from the sympathy in question—while, on the other hand, the mercury, which is known to increase the action in the liver, may produce its diaphoretic effect, from the same consent of parts above alluded to.

All the passions corroborate this doctrine. Fear, grief, and the other depressing passions, when moderate, lessen the secretion of bile—render the skin pale or sallow, and check the perspiration. On the other hand, anger and rage are well known to increase the biliary secretion; and their corresponding effects on the surface are visible to every eye. Joy, hope, and what may be termed the elating passions, when in moderation, determine to the surface, and keep up a salutary flow of bile and insensible perspiration, so congenial to the healthy functions of the body. I shall adduce no more examples, till I come to speak of dysentery and cholera, which will, I think, afford undeniable proofs of the sympathy in question.

In the mean time, this connexion between two important processes in the animal economy, while it fully accounts for the increase of action in the hepatic system, from the influence of a hot climate on the surface, will be found to elucidate many of the phenomena attending those

diseases we are considering; and perhaps remove the stigma of *empiricism* so commonly attached to their cure.

It is allowed that perspiration and biliary secretion are increased by tropical heat, and that the latter is *vitiated.* Perhaps, even here the parallel holds between the two.—How different is the profuse and gross evacuation of sweat, from that insensible halitus, or gazeous fluid, which just keeps the skin soft and smooth in health!

We know that Nature has recourse to the perspiratory process to obviate *greater* evils, that would accrue from accumulated heat:—we have every reason to believe, from analogy, that the increase of the biliary secretion is also a wise means employed by the same invisible agent, to guard against congestion, and derangement in the hepatic system.

I have shewn, from Dr. Currie, that even "the *necessary* quantity of perspiration in a hot "climate enfeebles the system." So the increased and vitiated secretion of bile debilitates and renders irritable the whole track of the alimentary canal. "The inhabitants of warm cli-"mates," says Dr. Saunders, "are extremely "subject to diseases arising from the increased "secretion of bile, and the excess of its quantity "in the primæ viæ, which either, by regurgita-"tion into the stomach, produces a general "languor of the body, together with nausea, "foul tongue, loss of appetite and indigestion, "or, being directed to the intestines, excites a "painful diarrhœa, ultimately tending to weak-

" en their tone, and disturb their regular peri-
" staltic motion."—p. 157.

As bile, especially when vitiated, is certainly apt to gripe and loosen the bowels, it might be supposed, that if it be increased with the cuticular discharge, those whose laborious exertions keep them every day bathed in sweat for hours, would be continually subject to diarrhœas. But Nature has admirably guarded against such an inconvenience, by establishing what may be termed a *vicarious sympathy* between the skin and the internal surface of the intestines, by which the secretion of mucus, &c. on the latter is diminished, as the perspiration is increased. In temperate climates, therefore, and among the laborious classes of society, this increase of the biliary fluid is productive of little or no mischief, being all expended during the digestion of their food, which is generally composed of such materials as require strong organs and powerful fluids for that purpose.

" ————Their daily labour thaws
To friendly chyle, the most rebellious mass
That salt can harden, or the smoke of years."

But it is very different with Europeans in hot climates. There the vicarious sympathy is not always able to keep in check the diarrhœa; and when it *is*, the superabundant secretion of bile accumulates in the primæ viæ, producing all the symptoms above enumerated, till its quantity or quality raises a commotion in the bowels, in consequence of which it is expelled.

Hepatitis.

Hence the impropriety of attempting athletic exercises in the heat of the day between the tropics, which must greatly increase the ill effects described.

These then are the penalties (aggravated, indeed, too often by our own misconduct) which are incurred, more or less, by emigration from a temperate to a torrid zone! They are the mild inflictions, however, of Nature, wisely calculated, and providentially designed, to ward off more serious evils. They must be continued long before they induce actual and dangerous diseases; and I am convinced we might, in general, escape the latter, by exercising our rational faculties in observing and rendering subservient to our use, the simple, but salutary operations of Nature. After having been severely taught to feel the ills I am going to pourtray, it is still a most pleasing task to trace the wisdom and benevolence of our Creator in what might *seem* the imperfection of his works.

We now proceed to the more serious injuries too frequently resulting from these spontaneous, but salutary efforts of the constitution, when counteracted or goaded on by our own injudicious management, or by unavoidable accidents.

I have shewn, on the authority of Dr. Currie, that excessive perspiration occasions a loss of tone in the extreme vessels; in consequence of which, the perspiratory fluid continues to be poured out *after* the cause or necessity has ceased to operate. It is precisely the same with respect to biliary secretion. He has likewise observed that, in the last-mentioned state, the

application of even a slight degree of *cold* is pregnant with danger. It certainly is so; and on more accounts than one. For not only is the animal heat too rapidly abstracted, but the extreme vessels on the surface, and likewise *those of the vena portarum*, are instantly struck torpid; the perspiration and biliary secretion are arrested; the passage of the blood through the liver is obstructed; and a temporary *congestion* throughout the portal circle is the result.

This view illustrates, and is at the same time confirmed by, the observations of two physicians in very different and distant parts of the world. Dr. M'Gregor remarks, that during the march of the army over the sandy desert of Thebes where the thermometer frequently stood at 118° in the soldiers' tents, the health of the troops was equal to what it had been at *any* former period in India. "Heat of itself then," says he, "does not appear to be the *principal* cause of the prevailing diseases." It certainly is not; but when excessive and long continued, it induces that state of the vessels on the surface, and of the liver, which is easily thrown into disease by the sudden application of slight degrees of cold. This accounts for Dr. Moseley's paradox, that "*cold* is the cause of almost all the diseases in *hot* climates, to which climate alone is accessary." He refers the mischief here entirely to checked perspiration; but the connexion which I have traced between this and *internal* mischief, will more amply elucidate this affair. Thus, in the months of April, May, and beginning of June, at Calcutta the heat is considerably greater than during the subsequent

rainy months; but perspiration, though profuse enough, is steady and pretty uniform, and the only diseases are those from increased secretion of bile. From the middle of June, on the other hand, the close, humid, and sultry atmosphere, is attended with an absolute exudation from every pore of a European's body; in which state the chilling application of rain—the raw, nocturnal vapours—or the atmospherical vicissitudes of autumn, will produce, as may easily be conceived, the effects I have described above, the consequences of which will be fever, dysentery, or both.* It is on this account that the Bengalese are observed to be more assiduous in using oily frictions at this period than at any other. They know, from experience, that by such precautions they are enabled to maintain a more *uniform* discharge from the pores, to check profuse perspiration by day, and to obviate the effect of rain or cold by night.

On the Coromandel coast, however, where the range of temperature is higher and more permanent; where the duration of the rains is short; where the nights are either hot, as during the hot land-winds, or temperate, dry, and clear, as at other times, the deterioration of the hepatic organs is slow and gradual, *where temperance and regularity are observed.* But among heedless sailors, soldiers, and others, who, to the stimulating effects of the climate, add inebriety, too much food, or ill-timed exercise, then the biliary secretion and perspiration are so hurried

* Vide sect. 2. Bilious Fever.

and augmented, and the vessels so debilitated, that the smallest atmospherical vicissitude becomes dangerous.

The effects resulting from the application of cold under these circumstances, will be in all degrees, from a slight shiver to a fever, or even instant death. We will suppose them only in a low degree. During the temporary torpor of the extreme vessels on the surface, and of the vena portarum, the pori biliarii and excretory ducts will partake of the same atony, and the bile will stagnate, till the re-action succeeds and propels it forward in its accustomed course, with a degree of acceleration proportioned to the previous quiescence. It is plain, that by frequent repetitions of this, the vessels and ducts in question will lose tone; and as atony is the parent of spasm, constrictions of the ducts must at these times take place; the bile will become viscid, occasionally, from stagnation, and be with more difficulty brought forward into the intestines during the subsequent increased action of the vessels. Thus obstructions will form, and an inflammatory congestion be constantly impending, till time, or some accidental aggravation of the causes above mentioned, kindles up HEPATITIS, which will run rapidly into suppuration, and perhaps in a few days destroy both the organ and the life of the patient, unless it be skilfully checked in its career.

If, during this catastrophe, we expect to find the pathognomonic symptoms of acute Hepatitis, as it appears or is described in Europe, we will be greatly deceived.

In *comparatively* few instances have I seen the violent rigors, high fever, hard, quick, and full

pulse, acute pain, &c. which we would naturally look for as preceding the destruction of such a large and important viscus.

Such cases, however, pretty frequently occur, during the first twelve or eighteen months after arriving in the country. A young gentleman of great abilities, and a good constitution, but who despised all curbing rules of temperance or precaution, ran about in the sun for some days at Malacca, indulging in all sorts of licentiousness and inebriety; and was seized in a day or two afterwards, on our passage to China, with rigors and heat alternating, succeeded in a few hours by pain in the right side, extending across the pit of the stomach, accompanied with some difficulty in respiration. He did not send for me till twelve or fourteen hours after the attack. He had then high fever—hard, quick pulse—great dyspnœa—a short cough, and the most excruciating pain in the region of the liver. Although I had then been accustomed to treat Hepatitis as it more usually appears in India, and this gentleman had been a voyage to Bengal in a Company's ship before he joined us, yet the disease had so decided a European character, that I determined on employing the European method of cure. Accordingly, blood was drawn "*pleno rivo*," from his arm, and repeated twice the next day. His bowels were kept open with saline cathartics, and antimonials, in nauseating doses, were prescribed, to relax the surface, which was dry and burning. By these means the febrile symptoms were greatly mitigated, and blisters to the side seemed to relieve the local affection. He still, however, had great tenderness on pressing the right hypochondre;

and on the fourth day he complained of having a flux.

I knew but too well how sure an index this was of mischief going on in the liver. I therefore commenced the administration of mercury without delay. But while endeavouring to saturate the system with this medicine, we were overtaken by a most violent typhoon, or hurricane, in the Chinese seas, which kept the ship in the greatest agitation, and completely drenched with water, for many days together. I had reason to believe, that he neglected at this time to take his medicines, and I was not able to pay minute attention to him myself. The flux was now the prominent symptom, and, though I used every exertion, I could never afterwards affect his mouth with mercury.

A fulness soon appeared in the right side; while the shiverings, cold sweats, and lastly, the colliquative diarrhœa, that terminated the scene, left no doubt that abscess had not only formed, but burst internally. He dragged out a miserable existence of more than three weeks from the commencement, and died at the island of Lintin, where I inspected the body.

Before his dissolution, the discharge per anum was purulent, and dreadfully fœtid. A few hours before his death he vomited a similar matter, and then sunk rapidly, retaining the possession of his mental faculties till the last moment; and regretting his inattention to the advice I had often given him, previous to his illness, warning him against the effects of intemperance and exposure to the heat of the sun.

On dissection, the liver was found one entire mass of suppurations and disease. I passed my

hand from it into the stomach, to which it adhered, and through which an abscess had burst. Another adhesion had formed between the liver and the transverse arch of the colon, through which was an exit also for the matter. In short, scarce a trace of healthy organisation was to be observed at any distance from the convex surface of this organ, which part alone preserved any thing lik a natural appearance.

I met with few cases in India so exquisitely marked with acute European symptoms as this. But in all those which exhibited traits at all approximating to the above, I delayed not a moment in commencing the mercurial treatment, *in conjunction* with the antiphlogistic; the *latter* being carried no farther than the inflammatory symptoms appeared to require; the *former* continued uninterruptedly till the full effect was produced, and till every shadow of danger was gone.

Such instances as these cannot be mistaken: they can too often be traced to evident and adequate causes; such as intemperance—violent exercise in the sun—or sudden exposure to cold when the body has been some time in a state of perspiration. They will occur principally among those lately from Europe, or at least within a year or two after their arrival; and such symptoms will be, in most cases, confined to the young, the robust, and plethoric habits.

But in general, the disease makes its approach in a much more questionable shape, though equally pregnant with danger as the foregoing, and not seldom more rapid in its course. A man comes to us, complaining of having a flux. He

says he is frequently going to stool—that he is griped; but passes nothing except slime—that his stools are like water, or some such remark. It is ten to one if he mentions any other symptom at this time. But if we come to interrogate him more closely, he will confess that he has had some soreness at the *pit of the stomach,* or perhaps in the right side. If we examine the part, a fulness will sometimes appear—if we press upon it, he starts back, or shrinks at least from the pressure.

If we look into his countenance, besides a certain anxiety, we will observe a dark kind of sallowness in his cheeks, and a yellowish hue in his eyes. The latter is seldom absent in hepatic diseases, both in India and Europe.

The temperature of the surface will probably not be much increased; but the skin will have a dry feel—his mouth will be clammy, and his tongue have a whitish or yellowish fur towards the back part. His pulse, though neither hard nor very quick, will have an irritable throb, indicative of some internal affection.

These are all the external marks we can perceive; and the few symptoms at the head of the list are all that the heedless soldier or sailor has noticed, or at least recorded. Happily for the patient, as well as his physician, the degree of violence in the bowel complaint, where other symptoms are not conspicuous, will be almost always a sure index to the rapidity or danger of that in the liver. Whereas in those cases where the symptoms are of the violent or European cast—particularly pain, fever, and dyspnœa, the bowels are very frequently costive for the first few days of the complaint.

If it is not early checked, it will frequently run on to suppuration, like the case described, and then the chance of its pointing, or of the matter finding its way through ducts or adhesions, with ultimate recovery, is faint indeed. Other symptoms will occasionally arise in this disease, or accompany it from the beginning. Thus, the fever is sometimes smart; the enlargement, hardness, or tenderness of the part, more evident; the inability of lying on a particular side may be complained of; a short cough may attend; or that peculiar sensation in the acromion scapulæ may be noticed, though it is not very often that this last is present.

These symptoms, and the duration of the complaint, will vary much. Indeed, the latter is very uncertain; as its continuance may be protracted to several weeks, without suppuration or organic derangement of vital importance following.

This, then, is the Hepatitis of India; and certainly there is no small dissimilarity in symptoms, between it and the acute Hepatitis of Europe. The flux, which may be termed the pathognomonic of the former, is almost always wanting in the latter. The one (Indian) partakes more of inflammatory congestion and obstruction; the other of active inflammation, like that of the lungs, kidnies, &c. &c.

Such are the marks that are to guide the practitioner when the disease is present. An attention to the following premonitory symptoms, described for the use of the more intelligent class of patients, into whose hands this essay may fall, will probably save them many a nauseous dose, and many a tedious day's illness.

Hepatitis.

In all bilious diseases, the *mind* is much affected. When Hepatitis is impending, it loses a portion of its wonted firmness. Our spirits are unequal; we are occasionally gloomy and irritable; and apt to see things through a distorting medium. This too frequently drives patients to have recourse to those very means which hasten on the fatal catastrophe, but which give a temporary relief to disagreeable mental sensations, that are only symptomatic of the corporeal affection—I mean, an indulgence in the fugitive pleasures of the bottle.

The eye and countenance assume the appearance alluded to before, termed Bombycinous by Dr. Darwin; and the urine becomes high-coloured, or tinged with bile; and almost invariably produces considerable scalding in its passage through the urethra. Dyspeptic symptoms arise, and generally mislead the patient into a belief that his complaint is only indigestion. After any thing like a full meal, we feel a most uneasy load and sense of oppression about the pit of the stomach, which are relieved by yawning, stretching, or standing up, and aggravated by stooping, or the recumbent posture. The digestion is never equal to the appetite, though the latter is often deficient; —and this leads to irregularity in the bowels. One day, there are dark, clayey stools, with costiveness; another, they are fœtid and slimy, with flatulence and looseness. The skin has not the moist, soft feel of health; but often a dryness, with partial clammy perspirations.

We may not feel, at this time, any pain on pressing the region of the liver; but a short and unexpected step on uneven ground, will frequently

cause a most unpleasant sensation at the pit of the stomach, or in the right side, as if something dragged there. Indeed, if the patient be attentive to his own feelings, some internal uneasiness will always be found to precede the pain on external pressure; at least I invariably found it so in my own person, and it has more than once admonished me of my danger.—The same remark has been made to me by intelligent patients. Disturbed sleep, and frightful dreams, precede and accompany this disease, in almost every case. Nothing harassed me more than this unpleasant symptom; and on *inquiry*, I always found my patients make the same remark; but they will seldom mention this, unless they are interrogated.

When all, or several of these symptoms, make their appearance, a few doses of calomel and cathartic extract, administered so as to keep up a regular increase of the alvine evacuations for some days, together with the strictest abstinence and caution in avoiding the extremes of heat, or sudden vicissitudes, will often anticipate the attack of this insidious disease, and entirely check it in embryo. If these means, however, do not remove the morbid train of premonitory sensations above described, mercury should be slowly introduced, so as to produce a brassy taste in the mouth, and kept at this point till the return of health, which would hardly ever fail to result.

It will be readily understood, that the warning symptoms above mentioned, can only be expected where the disease is coming on gradually, from effects of climate, and the more moderate application of such causes as hasten these effects. Where the *excitantia* are strong and evident, such

as great intemperance; sudden exposure to considerable atmospherical vicissitudes, particularly to cold after perspiration; violent exercise, &c. then the interval between them and actual disease, will not always afford many admonitory sensations, or permit us to put in force the very desirable precept of the poet—

"Principiis obsta:—venienti occurrite morbo."

TREATMENT.

The medical practice of India is more simple than that of Europe; evidently from the great connexion which experience has traced between many *apparently* dissimilar diseases in the former country; rendering it only necessary to vary, in some degree, the same methodus medendi.

During the first twelve months after arriving in the country; whenever the patient was at all robust, the pyrexia evident, or the pain considerable, I bled at the very *commencement*, and not with a sparing hand. I did so with a twofold view. One was to relieve the febrile symptoms, by lessening the inflammatory congestion in the liver and portal circle; the other, to lower the tone of the constitution, which, experience taught me, accelerated the effect of that medicine on which my principal reliance was

placed. To further both these objects, one or two doses of calomel, or the pil. hydrarg. with opium and antimonial powder, were given, and followed by castor oil or jalap, which never failed to bring down a copious alvine discharge, consisting of any thing but natural fœces, or healthy bile. For in the flux attending Hepatitis, the violent straining and griping are succeeded by nothing but mucus and blood, accompanied by a distressing tenesmus, *unless* when laxatives are taken, and *then* diseased secretions only, with occasionally a hardened scybala, or other fœcal accumulation, are passed.

It appears, by Mr. Curtis, that the hospital practice at Madras in his time, [thirty years ago] was to give three grains of calomel, with some rhubarb and soap, night and morning, till ptyalism came on; and if it was necessary to have the mouth sooner affected, a drachm of mercurial ointment was rubbed in on the affected side every night. No opium was then thought of; but the hypothetical prejudice against that valuable article is now, I believe, pretty well worn off; and I know, from pretty ample experience, that, in conjunction with antimonial powder, it forms a most admirable auxiliary to the mercury; not only soothing many uneasy sensations of the patient, but determining to the surface, and promoting a diaphoresis, which is of infinite service in this, as in most other diseases.

In all urgent cases, I seldom gave less than twenty-four grains of calomel or pil. hydrarg. in the twenty-four hours; and generally in the following manner:—

Hepatitis.

℞. Submur. Hydrarg.
vel
Pil. Hydrarg. gr. vj;
Pulv. Antimon. gr. iij;
Opii, gr. ß;

M. ft. bolus—sexta quaque hora sumend.

During the exhibition of these medicines, an occasional dose of castor oil, or other laxative, and emollient injections, contributed to mitigate the griping and tenesmus; while blisters often relieved the local pain of the side. But these were only secondary considerations; and the grand object was to get the mouth affected, when the flux and other symptoms were sure to give way.

The secretion of healthy bile—the flow of saliva from the mouth—and a gentle perspiration on the skin, were synchronous effects of the medicine, and certain indications of the approaching cure. But it was necessary to keep up these by smaller doses of the medicines alluded to, not only till every symptom of the disease had vanished, but till the clear countenance, keen appetite, and regularity of bowels had returned, and health and strength were completely restored.

Indeed, a degree of obesity generally succeeds the administration of the medicine, and the cure of the disease; nor need we wonder at this, when we consider the previously deranged state of the digestive organs, to which a renewed energy is now communicated.

Treatment.

But, in effecting these salutary objects, I have often been obliged to push the mercurial treatment in a much bolder manner than above described. I have myself taken calomel in twenty grain doses, three times a day, without experiencing the slightest inconvenience from the quantity; nay, I always found large doses sit easier on the stomach, and occasion less irritation in the bowels than small ones. At this time, too, I was using every exertion, by inunction, to forward the ptyalism; yet it was several days before I could produce any effect of this kind. These doses may astonish those who do not know the difficulty of affecting the mouth with mercury in a hot climate, when the liver is verging to suppuration. The idea of their purging and griping at these times is truly chimerical, Indeed, I never saw any of those terrible cases of hypercatharsis which people so much talk of, except where cold was applied, and perspiration checked during salivation, when certainly, as may naturally be supposed, a severe bowel complaint is the consequence. But in that dangerous state of the liver which I have mentioned, when a few hours, perhaps, must determine, whether healthy secretion or destructive suppuration is to result, a tardy, irresolute practice, is pregnant with mischief—

> "No season this, for counsel or delay,
> Too soon th' eventful moments haste away!"

Unfortunately, at this critical period, such is the torpor throughout the lacteal and lymphatic vessels, that the largest doses internally, and

the most assiduous inunctions externally, will sometimes fail in introducing a sufficient quantity of mercury to saturate the system. In the mild climate of Prince of Wales's Island, where the temperature of the air might be supposed to favour absorption, I have had a couple of Malays daily employed, for hours at a time, in unsuccessful frictions, the lymphatic vessels refusing to take up the ointment in any considerable quantity. At the commencement of this disease, and of dysentery, I have often been able to form a tolerably accurate prognosis of the difficulty that would be experienced in raising ptyalism, by observing the aptitude of the absorbents on the surface, while a drachm or two of mercurial ointment were rubbed in on the thigh or arm, under my own inspection. This hint may be worth attending to.

From the above statement it will be obvious, that no trifling shade of difference exists between the acute Hepatitis of India and of England. It is true that a late writer [Dr. Mills on Diseases of the Liver] who has *never visited* a tropical climate, asserts, with equal confidence and experience, that even the *symptoms* of acute Hepatitis are the same in both countries, except that they are a little *more violent* between the tropics than in Europe, and *consequently*, that the disease runs more rapidly into suppuration. This last termination, however, he pretty openly insinuates, is owing in many cases to the mercurial treatment so foolishly employed in India for the cure of this endemic.

"Within the tropics, for example," says he, "the *symptoms are generally more violent,* and

Mercury.

" the tendency to suppuration *consequently* more " rapid, than in more temperate latitudes; but " we find the *same pains, fever, state of pulse,* " *hiccup,*" &c.—p. 35.

Where Dr. Mills got this information, I know not; it is in direct contradiction to the evidence of my own senses and feelings; but that, of course, will go for nothing with him. It could not have been from his justly celebrated predecessor in this walk; for Dr. Saunders asserts the contrary. " It is also obvious," says the latter, " that the Hepatitis of India is, *in all similar* " *stages, a milder disease* than the sporadic He- " patitis of this country; the phlogistic symp- " toms are *less violent.*"—Appendix, p. 14. The very last writer on the diseases of India, Mr. Curtis, a gentleman who observed with accuracy, and reported with fidelity, remarks that " in " about *four or five* cases only, out of a *great* " *number*, the commencement was attended " with symptoms of pyrexia, *i. e.* heat, thirst, " quickness of pulse, and rigor, with acute pain " in the side."—Diseases of India, p. 92. And again at page 97. " If it was neglected or " wrong treated in the beginning, it sometimes " ran suddenly into suppuration, even where " there were *no acute symptoms.*" To which of these will the reader attach most credit;—to Mr. Curtis, reporting from the bed-side of the patient, on the sultry shores of India, or to Dr. Mills, *describing, from his study in Dublin, the disease of a climate he never visited?* *

* Others, *melioris notæ*, may feel the force of this question.

Hepatitis.

It is necessary to keep in mind this *trifling* inaccuracy respecting the *disease*, when we come to examine the following indiscriminate philippic against the *remedy*. Speaking of mercury, Dr. Mills says, "It enlivens the circulation, "while it *empoisons the blood;* and invigorates "the fibre, while *dissolving its texture*—In re- "moving one disease, it evolves many—In re- "lieving slight affections of the alimentary "canal, or of the *liver*, it begets serious ones of "the *same organs.*"—p. 32.

The medical reader will judge, whether rhetorical antithesis, or philosophical accuracy, has been studied in this sublime passage. But Pandora's box is not yet opened. Describing the effects which this terrible drug produces in particular constitutions, he proceeds thus:—"In "some, tubercles are excited in the lungs, *liver*, "mesentery, &c. &c. In others, the eyes are "affected, and the lens is obscured—in others, "the fauces are ulcerated, and the uvula is lost "—one person is seized with an *affection* of the "head; another, of the prostate gland—or "bladder; another, of the stomach, intestines, "spleen, or pancreas: females, moreover, are "liable to deranged action of the uterine system. "But these are not the only diseases evolved "by *mercury;* to the above list we may add "mania, *gout*, epilepsy, and, if the constitution "be *free from all hereditary taint*, rheumatism, "nervous, and various anomalous symptoms, "are produced; or diarrhœa, cynanche tonsil- "laris, *chorea*, or the mercurial disease!!!"—p. 34. What a wonder that Dr. Mills did not add *lues venerea* to this countless catalogue of

human afflictions, conjured up by the magical caduceus of mercury!!! As the accusation stands, however, I appeal to every one who has visited London, or our great sea-port towns, whether the above passages are not fac-simile's of those eloquent effusions which meet our eyes at the corners of streets, in the shape of hand-bills, having in large letters at the top—"SALIVATION EXPLODED!!"

It would be useless—perhaps presumptuous, to oppose to the fiat of a college licentiate, and hospital physician, the *ipse dixit* of an obscure navy surgeon, who has nothing but the hard-earned knowledge resulting from actual observation, and personal suffering in various climates, to support his assertions.* But I shall produce certain "contre-projets" from the writings of those whom Dr. Mills may think it hardly safe to combat.

I shall first lay before the reader the sentiments of a physician, who had been *thirty-five years* in extensive hospital and private practice, and who has favoured the public with a work, characterized by Dr. Hamilton of Edinburgh as "containing a collection of practical facts, for "extent and value unequalled in any language." —It is the late Dr. Parr of Exeter. In his "London Medical Dictionary," under the article

* Although the author cannot yet *afford* a diploma, there is no scarcity of them in the navy. We have now nearly fifty M. D.'s serving their country in the humble capacity of navy surgeons, or assistants, besides a number of *hieroglyphics*, such as F. C. S.—M. A.—N. B. H. &c. We can therefore boast of numerous *literary characters* in our corps.

"argentum vivum," will be found the following observations: "As a medicine, there is scarcely "an indication that mercury cannot supply: "there is no more certain and active emetic "than mercurius vitriolatus; a more powerful "laxative than calomel; a more effectual and "steady diaphoretic and stimulant than mer-"curius muriatus; a more certain emmena-"gogue than calomel; a more infallible sialo-"gogue than either of its preparations. If we "look at the principle by which these different "changes are effected, we shall find it a *steady* "*and permanent stimulus.* When applied to the "extremities of the excretory ducts, it excites "the actions *of the various glands;* when, on "the contrary, it is determined from the mass "of blood to the first branches of the glandular "system, it is equally powerful. When no glan-"dular system intervenes, it excites the action "of the *extreme vessels* over the whole body."

After describing its efficacy in the various cutaneous complaints, Dr. Parr proceeds.—"*Scro-*"*phula* unites the cutaneous complaints with "the common obstructions; and in this case "also, mercurials joined with, or followed by, "neutral salts, are *particularly useful.* In *gutta* "*serena,* indolent tumours of the viscera, par-"ticularly of the liver,—in jaundice, constipa-"tion, and many obstructions, it is obvious that "mercury must be useful on the same principle. "In *chronic inflammations of the liver,* its action "is particularly elucidated by a singular *fact*— "the disease seldom yielding till the *gums are* "*affected by the mercurial.* Its use in old quar-"tans seems owing to its influence on infarctions

Mercury.

" of the viscera. And in various dropsies, inde-
" pendent of its evacuating powers, it is pro-
" bably salutary by the same effects. In *amæ-*
" *norrhæa* this action is peculiarly striking. In
" *melancholy*, the viscera are commonly affected,
" and mercury is sometimes a very useful re-
" medy. In *chronic rheumatism*, the inactive
" state of the vessels is sufficiently obvious, and
" *mercurials are singularly useful.*"

Mr. John Pearson, who has administered this remedy to more than *twenty thousand patients*, makes this reflection :—" Men may amuse them-
" selves by declaiming against mercury as an
" uncertain remedy; they may utter querulous
" details of its baneful effects, and *retail tra-*
" *gical stories* of its malignant influence on the
" bodies and minds of those who use it; but
" surely all this *turbulent eloquence* may be di-
" rected, with equal advantage, not only against
" every potent article in the materia medica,
" but against the very aliment by which we are sustained."

" We are often told," says Dr. Watt [Cases of Diabetes, &c.] " of the pernicious effects of
" mercury on the constitution; but if I were to
" judge by my own experience, I would form
" an opposite conclusion. In cases where mer-
" cury was carried to such a length, that the
" patients have been for two weeks without
" tasting either meat or drink, the cure was
" most complete. In some instances, this was
" done where the patients were supposed to
" have suffered greatly from previous saliva-
" tion; and so far from injuring the constitu-
" tion, the process appeared to give new energy,

" and the most perfect health has been the con-
" sequence." And again:—" There is pro-
" bably no medicine that affects the system so
" powerfully, in eradicating either acute or
" chronic ailments, or after the prudent appli-
" cation of which, the human frame attains a
" state of such vigorous and healthful enjoy-
" ment. This sentiment is not in unison with
" the *anathemas* of some modern *declaimers*, but
" is consonant to the *experience* of those who
" have employed this valuable medicine to era-
" dicate, not to palliate disease." — Preface, p. xiii.

" Both in bilious and liver fluxes," says Mr. Curtis [Diseases of India] " where we had occa-
" sion to administer long and repeated courses
" of mercury, I observed that it was longer, in
" whatever way employed, of affecting the
" mouth, and that ptyalism could seldom be
" carried the same length by it, as in colder
" countries; and so far from weakening the
" constitution, inducing hectic, and a dissolved
" state of the blood, our patients generally got
" full and plump after its use."—p. 147.

" Thus there appears," says Dr. Clutterbuck [Essay on the Nature and Seat of Fever] " to
" be very satisfactory evidence of the utility of
" mercury in fevers of various descriptions, as
" well as in other inflammations,"—p. 404.——
" Moderately used, mercury often relieves head-
" ache depending on local increased vascular
" action; and it is considered specific in hydro-
" cephalus."—406.——" It has often also re-
" moved gutta serena, *epilepsy*, and other sen-
" sorial affections. Employed so as to excite

Mercury.

"salivation, it has frequently contributed to the "cure of obstinate intermittents, and it supersedes various other diseases that are kept up "by an acquired habit. We are prepared, "therefore, to expect, that it will be hereafter "resorted to with more confidence as a remedy "in fever."—p. 407.

These passages form a singular contrast, and I should conceive, a tolerably powerful antidote, to those from the pen of Dr. Mills. I could furnish many solid, and some curious corroborative proofs of the truth of those extracts, from my own personal observation and experience. Naval and military surgeons, particularly the former, from living, I may say, under the same roof with their patients, sometimes for years before and after the administration of mercury, have perhaps better opportunities of observing its effects and consequences than any other class of practitioners. During the last three years that I was surgeon of a line of battle ship* in the channel, we seldom went out of port with less than twenty or thirty venereal patients [the men having shared much prize-money]; many of whom, from long concealment, or neglect of their complaints, were obliged to undergo tedious administrations of mercury, often under great diadvantages in regard to accommodation and regimen, as well as inclemency of season; yet I declare, upon my honour, that I never in all that time saw a single instance, among the diversified habits and constitutions of my pa-

* The Valiant, of 74 guns.

tients, where the medicine could be fairly accused of having called forth any of those terrible latent evils so exaggerated by Dr. Mills. A few cases of rheumatism, indeed, from imprudent exposure to wet and cold before the effects of mercury had worn off, occurred; but such exposures were by no means even generally followed by such consequences.

One of my patients, in a state of salivation, got drunk, and leaped overboard; and it was full half an hour before he was brought back to the ship, though it was a raw and cold winter evening.

The ptyalism was checked, and I expected some serious mischief would ensue; but, to my surprise, the spitting returned in a couple of days, by confining him to his bed with diluents, and not the slightest inconvenience followed. Indeed, I almost invariably remarked, that a degree of *corpulency* supervened on their departure from the list; and why should it not? for certainly the appetite and digestion are wonderfully sharpened after a mercurial course, as I well know, by experience. In India, as Mr. Curtis has remarked, this effect is still more conspicuous, from the previous dyspepsia, and other symptoms of derangement in the chylopoietic viscera. This medicine, however, given to animals in health, has the effect of quickening their growth, and increasing their fatness. I have myself strewed calomel over the oatmeal used for feeding pigs on board a ship, and found them *afterwards* to thrive in a very surprising degree.

Mercury.

The following anecdote was related to me in India, by a gentleman whose veracity I had no reason to doubt, and who had no theory to support by the deduction:—

"An officer of the navy, finding himself unpleasantly situated, pleaded illness, and was sent to sick-quarters. As the alleged complaint was *hepatic*, a box of calomel pills was furnished him, which he, not choosing to swallow, amused himself, one morning, by chucking out of the window to some of the doctor's poultry, that were straying underneath. The poor fowls, unconscious of deception, devoured the pills without any wry faces, under the idea that they were so many peas! In a few days, however, the feathers began to fall off in different places, and these new patients exhibited a most grotesque and pitiable appearance, to the great regret of the officer, and consternation of the doctor, who was quite puzzled to account for the phenomenon. But things soon wore a better aspect; for the fowls became afterwards the finest in the whole neighbourhood; though, for obvious reasons, the *fattening secret* was still kept from the doctor's ears by both classes of his patients."

But to return to Dr. Mills. The rock on which this gentleman splits, is as plain to the view as the sun at noon-day. He has laid it down in his mind, that acute and chronic Hepatitis differs no otherwise than in the degree of *inflammation;* and that as mercury is *merely a stimulus*, it must consequently be improper in both cases. Let himself declare it:—"Acute hepatitis differs from the chronic only in de-

gree." page 20.—" The treatment of acute hepatitis is so *similar* to that of the chronic, which we have already considered, that it will not be necessary to speak of it at great length; I shall only observe, that as the disease assumes a more alarming appearance in the acute, our active remedies are to be more speedily and fully administered;—such are, blood-letting, general and topical; purgatives; blisters, joined with diluents, antimonials, and the sedative regimen." p. 21, 22.—" It is of moment in the present inquiry to recollect, that the symptoms by which the disease is characterized are *inflammatory*, and that mercury is a *stimulating* remedy; now stimulants produce inflammatory diseases, or aggravate their violence: sedatives therefore, and not stimulants, are here necessary," p. 29. —" But those who do not allow it to be useful in the first stage, maintain its efficacy in the second, when the inflammatory symptoms have abated; . . . . . but it seems to be forgotten that the *inflammatory action*, though in a less degree, still subsists, which *mercury*, and all other stimulants, must necessarily aggravate." p. 30.

This is all very specious and fine in theory; but as diseases are not more readily cured by eloquence now, than in the days of Celsus, I shall beg leave to apply the touchstone of practical experience. A man is seized with *acute* rheumatism; but by bleeding, laxatives, diaphoretics, &c. &c. the febrile symptoms are reduced, the pains alleviated, and we expect that all is well. But, unfortunately, it often hap-

Mercury.

pens, that the enemy keeps tenacious possession of his local habitation; and in the end, we have to combat the disease in its *chronic* form. Here the practical physician shifts his ground, and prepares to administer small doses of mercury, with gum guiacum, decoction of mezereon, the vapour-bath, &c. But, no, says Dr. Mills —" chronic [rheumatism] differs from the acute only in degree,"—and—" it seems to be forgotten that the inflammatory action, though in a less degree, still subsists, which mercury and all other stimulants must necessarily aggravate."— You must therefore continue to *dephlogisticate*. Your reasoning, replies the physician, is ingenious, and probably just; I shall therefore consider on it; but, in the mean time, I beg leave to pursue that plan which experience has proved most successful.

If Dr. Mills alleges that he did not mean to apply his arguments to the two states of rheumatism; I answer, that they will apply, and with equal force, as to the two states of Hepatitis; consequently he is under the necessity of taking this unwelcome, and perhaps unexpected guest, under his protection, or else abandon his other protegée along with it. Dr. Mills seems not to have noticed the sensible remark of Dr. Saunders on this subject, which is exactly in point.

" But it appears," says the latter, " that the transition from active inflammation into a state of resolution, is not immediately followed by a healthy condition of the part, but it remains for a time debilitated, and disposed to relapse into

a chronic state. This will probably be found the proper period for the exhibition of mercury, which acts as a spur on the vascular system of this organ, and by its moderately stimulating effects, occasions a degree of action which, when protracted to a proper length, terminates in health."—On the Liver, page 326. Now it is from the similarity which East-India Hepatitis bears to this state, [excepting that it is liable to run into suppuration, as well as relapse into a chronic form] that the success of the mercurial treatment has proceeded; and when Dr. Mills reprobates the indiscriminate exhibition of mercury, during the first inflammatory stage of the disorder in this country, he only combats an *abuse* to which the best medicine is liable, and ever will be liable, in the hands of those who prescribe merely for the name of a disease. But in labouring to drive mercury from our prescriptions in chronic hepatitis, and in various deranged functions of the liver, he has undertaken that which would require more eloquence, and other arguments than he has used, to accomplish; for he must first persuade us to lay entirely aside the evidence of our own senses. It is true that, like the author of "*Lues Bovilla*," he may be too successful in disseminating doubts, apprehensions, and prejudices, among the vulgar, by holding up to them, with "turbulent eloquence," the hydra-headed phantoms of imagination, as the offspring of mercury—

"————————Hinc spargere voces
In vulgum ambiguas."————————

Mercury.

But, surely, the liberal and enlightened of his own profession, must highly disapprove of such conduct.—Let us see the grounds which he adduces for this rejection of mercury in chronic hepatitis.

"A gentleman of hale constitution, in the vigour of life, complained of shooting pains throughout the right hypochondriac and epigastric regions, attended by a low, irregular fever. The blue pill was given, and two scruples of the mercurial ointment were rubbed in nightly, on the side affected:—he was put on a *full diet, and a pint of wine was allowed daily, to promote the operation of the mercury.* At the expiration of a week, the gums were affected, but the pain of the side became more acute, and febrile symptoms set in, accompanied by gripes, and general soreness of the abdomen.—Such were the consequences of the *mercurial action, and of the full regimen.*"—p. 18.

Good heaven! in what part of Europe, at the present enlightened period, would a *physician* prescribe "full diet, and a pint of wine daily," to a patient labouring under low fever and hepatic inflammation? Dr. Mills has placed himself in an awkward predicament: either he prescribed or was privy to the prescription. In the first case, he has published his own misconduct; in the second, he has blazoned the misconduct of his colleagues; for which, no doubt, they will return him suitable thanks. If he neither prescribed, nor was privy to the prescription, then he heard it from some person, who perhaps had it from a third, &c. To mend the matter, this "full diet and a pint of wine," were given

to "*promote the operation of the mercury*!"—This sentence shews us, that Dr. Mills must have been pretty closely concerned, when he knew the very *intentions* of the prescriber. Now, there is not an hospital-mate, or assistant surgeon, throughout the army and navy—nay, there is not a nurse in the sick-berth of a man of war, or the venereal wards of an hospital, who does not know, that to "promote the operation of mercury," it is best to subtract the wine *in toto*, to diminish the ration of provisions, and to seclude the patient from the open air. But if these authorities are beneath the notice of Dr. Mills, I shall adduce that of a very intelligent practitioner, Dr. Watt.—"A cure from mercury," says he, [cases of Diabetes, &c.] "is not to be expected, while the patient's body remains unreduced, and while he continues to take his usual diet."

This being the case, then, what a shameless want of candour there is, in placing mercury as the prominent and foremost cause of the bad symptoms that ensued! If the full diet and wine had been prescribed for a week, without a particle of medicine, can any one doubt that the complaint would have progressively increased? On the other hand, had the mercury been exhibited, and the food and wine subtracted, will any one assert, that the disease would not, in some measure, have been checked?

There is a feature in this case, which is worthy of notice; namely, that the "febrile symptoms *set in*" full seven days *after* fever. There is little doubt but that the candid author attributed this phenomenon also to the mercury. But I am

disposed to ascribe it to the nature of the *soil* where the circumstance happened; for on this side of the water, I have pretty constantly observed "febrile symptoms *set in*" at the very commencement of fever, and indeed continue, *in almost every instance*, till its cessation. But as this does not appear to be the case on the banks of the Liffy, we shall have less reason to laugh, in future, at the far-famed hibernicism respecting the "*setting out*" of the stage-coach and the basket.—Risum teneatis amici?

The disease in question was what I have often experienced in my own person, and might have been relieved, if not entirely removed, in forty-eight hours. The depressed sensorial energy, resulting from mental anxiety and fatigue, produced a corresponding state in the hepatic functions; the consequence of which was, an accumulation of viscid and vitiated bile in the ducts, and a degree of congestion or plethora in the vessels of the liver, giving rise to the low irregular fever, and local uneasiness. We may readily conceive the effects of a pint of wine and full diet, in such a state of this organ, as well as of the other chilopoietic viscera, which invariably sympathise with it. A few doses of calomel, opium, and antimonial powder, to determine to the surface, relax the ducts, and soothe irritation, followed by brisk laxatives, to carry off the diseased secretions, and remove the congestion of the vessels, with rest and abstinence, would have cured this "*chronic inflammation*" of the liver, which an injurious regimen, and the injudicious administration of medicine, greatly aggravated.

Hepatitis.

From such materials as these, however, have sprung the "blood-empoisoning—fibre-dissolving," and other opprobrious epithets, so lavishly heaped on a medicine, of whose fair fame I have produced such honourable testimonials.

To return from this long digression, which I hope has not been entirely useless. It might be expected that I should here point out the predisposing and exciting causes of Hepatitis; but these have been in a great measure anticipated by the preceding remarks. I observed, that the application of cold to the body, during and subsequent to perspiration, was by far the most frequent manner in which the disease was contracted; but the European, and the casual visitor, may well wonder how cold can be often applied on the burning coast of Coromandel, where the temperature is high and steady by day—where the nights are, for months together, hot—and seldom raw or damp, as at Bombay or Bengal. A nearer inspection dispels the difficulty, and shews us that nothing is more common than such an occurrence. The European soldier or sailor, exhausted by exercise in the heat of the day, and by profuse perspiration, strips himself the moment his duty is over, and throws himself down opposite a window or port, to inhale the refreshing sea-breeze; his shirt, in all probability, dripping with sweat. The effect of this present gratification is well exemplified every day before his eyes, by the officers of his ship or regiment, who, when *hobdaars* and salt-petre are not at hand, refrigerate their wine or water, by suspending the bottles in wetted cloths (generally worsted or woollen) and exposed to

Causes.

a current of air, when the evaporation, in a few minutes, renders the contained fluid quite cold.

It requires more philosophy or self-command than generally falls to the lot of the aforesaid classes, to resist the grateful refreshment which this dangerous indulgence affords. The dreadful sensations arising from heat and thirst imperiously demand fresh air and cold drink, which few have stoicism enough to forego, even where the bad consequences are previously known. I shall have occasion, hereafter, to relate some fatal instances of this kind, which happened under my own eye. The night, which Nature designed as one of the grand restoratives of our energy, is the time when many imprudent exposures, of the species described, are made among sailors and soldiers; particularly the former, on account of the close and sultry apartments in which they sleep, whereby they are forced to make frequent nocturnal visits to the open air, while they are streaming with perspiration.

It is asserted by almost all writers on tropical climates, that atmospherical vicissitudes are comparatively trifling in those regions, and that the thermometrical range is seldom of greater extent, than from five to ten degrees daily, and fifteen or sixteen degrees annually. "In countries between the tropics," says Dr. Moseley, "the heat is nearly uniform, and seldom has been known to vary through the *year*, on any given spot, either by *day or night*, sixteen degrees.—p. 2. This is *not true*: the thermometer, at Bombay and Calcutta, in the month of January, is frequently as low as 55° in the night; and in the month of April up to 90°,

or even higher, in the day; making an annual vicissitude of thirty-five degrees. And, notwithstanding Dr. Moseley's dogma to the contrary, a transition of eighty degrees, *in one day*, has been witnessed between the tropics. Dr. M'Gregor, in his Report to the Medical Board at Bombay, for the month of November 1800, observes, that "the mercury had an extraordinary wide range, from 68°—50° to 130° in the open air." Edin. Med. and Surg. Jour. July 1805, p. 271. And he shortly afterwards adds—"More cases of *Hepatitis* appeared than in either of the two former months."—ib. But even on the Coromandel coast, the *actual* vicissitude to which the human frame is often exposed, far exceeds what is generally believed. Let a thermometer be suspended in the open air at Madras, and it will point for many hours in the day to 120° or 130°, but in the night it will fall to 80° or 82°. Here, then, is a range of 40 or 50 degrees in the day, to which hundreds of European soldiers and sailors are unequivocally exposed; for, let it be remembered, that they are kept neither in glass cases, nor the cuddies of Indiamen, though the above consideration ought to intercede powerfully in their behalf, and induce their officers never to subject them to such dangerous vicissitudes in a climate of that kind, unless from inevitable necessity.

But this subject will meet with a very full consideration in the prophylactic part of this essay, where I hope to offer some important remarks on certain means of preserving health in hot climates, connected with the above topic, which have been hitherto passed over unnoticed or misunderstood by medical authors.

Causes.

I need hardly remark, that intemperance in spirituous liquors strongly predisposes to and excites Hepatitis. But it is not generally known, or suspected, that the depressing passions, particularly grief, have the same effect. I have seen many instances, however, where no doubt could be entertained on the subject. I shall only relate one. In the month of December 1803, while H. M. S. Centurion was lying at anchor in Mocha Roads, two men, when in the act of loading a gun, had their arms blown away, and were otherwise dreadfully shattered, by the gun going off, in consequence of the neglect of a boatswain's mate, who was captain of the gun. One of the men died, and the circumstance produced such a degree of remorse and grief in the mind of the careless boatswain's mate, that he was instantly seized with Hepatitis, [though in the prime of life and health] and in a few days followed his unfortunate shipmate to the grave!——The close sympathy which subsists between the *brain and liver* is well known, and strongly illustrated in hot countries, where the latter organ (like the lungs in Europe) being predisposed to disease from the general effects of climate, suffers readily and obviously, in consequence of the sympathy in question.

I shall now make a few observations on those chronic derangements in the liver and its functions, which, in hot climates, succeed violent or repeated attacks, such as I have already described. These derangements, however, (especially of function) are but too often the consequence of long residence between the tropics, independent of any serious or acute inflammation in this organ. Where induration, enlargement, or any particular

structural alteration has taken place, the external accompaniments are evident to the most superficial glance.

Sallow countenance—emaciation—irregular bowels—high-coloured urine—scalding in its discharge—low spirits—often a chronic flux, with pain, fulness, or hardness in the region of the liver—evening fever—dry cough, and swellings of the ancles, are the prominent features of this deplorable malady. A degree of induration and enlargement continued nearly three months after a severe attack of Hepatitis which I experienced in my own person; and a distressing bowel complaint succeeded, and harassed me for more than a year.

A return to Europe brought me no relief; on the contrary, by getting cold in my feet, while sitting in a dissecting-room in London, a few weeks after my arrival, a violent Hepatitis was induced, accompanied by the usual dysenteric symptoms. The flux that preceded, for so many months, this last relapse, may serve as a specimen of those connected with chronic hepatic obstructions.

Once, perhaps, in the twenty-four hours, generally in the morning, there would be an ill-conditioned fœcal evacuation, accompanied with mucus, slime, and apparently vitiated bile. After this, I would have two, three, and sometimes four hours' respite. An uneasy sensation would then arise in my bowels, with rumbling and flatulence, which would proceed along the whole track of the intestines, when I was forced suddenly to stool, nothing, however, coming away, but some slimy mucus, streaked occasion-

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ally with blood, or greenish, bilious sordes. This discharge was always attended with more or less griping, straining, and some slight degree of tenesmus; after which another interval of ease, two or three hours in duration, would take place, and then the same symptoms as before described, continuing with great punctuality, for weeks and months together. During this period, my appetite was tolerably good, but my spirits exceedingly irregular—generally depressed. The least excess in eating or drinking—the exposure to night air—or the slightest application of cold to my feet, aggravated my complaint. The cheering prospect of returning to my native home, and the hopes that climate alone would effect a cure, together with the want of accommodation for undergoing a course of medicine on a voyage, where I was only a passenger, induced me, most unwisely, to delay the only effectual means of curbing the disease; till a nearly fatal relapse forced me to have recourse to that medicine which more than once before preserved my life. The flux, which all this time was symptomatic of liver obstruction and irregular secretion, was completely removed with the original cause.

Two circumstances appear to be almost always attendant on these chronic diseases of the liver—diminished secretion of bile, and low spirits. The former we may account for in two ways: either as resulting from that atony which takes place in an organ that has been long stimulated into inordinate, or at least irregular action, by hot climates, &c. &c.; or from structural derangement, generally induration, which

but too often accompanies the preceding state. It is likewise certain, that the bile is vitiated in quality, as well as deficient in quantity. And the numerous complaints which we hear from people, with evidently torpid livers, of *excessive secretion*, which they conclude must be the case, from the nausea, vomiting of green bile, sick head-aches, yellowness of the eyes, gripes, &c. &c. &c. with which they are occasionally harassed, arise from irregular, but on the whole, diminished and disordered biliary secretion.

I do not think the ingenious Dr. Watt has been very happy in his pathological elucidation of bilious diseases.—"The liver," says he, "receiving its stimulus from venous blood, has more to do than in health; hence the origin of bilious complaints, which, with low spirits, and prostration of strength, generally mark the first stage of disease."—p. 207.

The liver may have *more to do* in bilious diseases than in health; but I am well convinced *it does less.* The torpor in that organ keeps a general plethora throughout the abdominal system of black blood; consequently, when it happens to be occasionally excited into unusual action, a greater flow of vitiated biliary secretion ensues, from this very cause; when, unless proper means are employed, the viscus falls back again into its previous state of inactivity. This view of the subject elucidates the effects of venesection, purgatives, and all the best remedial processes.

The torpid state of the bowels, dependent on that of the liver, admits of morbid bilious accumulations (after those periods of excitement)

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which lurk about the duodenum, or regurgitate into the stomach, by inverted peristaltic motion, producing all the phenomena alluded to. But, in a great proportion of patients, the torpidity of the alimentary canal is seldom roused by the acrimony of the bile; costiveness and low spirits going hand in hand, with the most obstinate uniformity.

The increase and amelioration of the biliary secretion, then, must always be kept in view, when treating this chronic obstructed, or torpid state of the liver.

The connexion which I have traced between the biliary and perspiratory processes, will elucidate the operation of those means of relief, which experience has determined; it will also suggest the use of some others. Among the remedies for this complaint, mercury, given in small doses, and slowly, so as to keep up a brassy taste in the mouth for some time, holds a distinguished rank; as it effectually promotes the secretion of bile, and excites the extreme vessels on the surface.

To increase the latter effect, however, it has been found useful to combine with it a small proportion of opium and antimonial powder, both to guard the bowels from irritation, and determine to the skin. It is quite evident, and ought ever to be kept in mind, that no *violent means* should ever be used in stimulating an organ to action, whose torpor or derangement has proceeded from this very cause. The state of the liver here may be compared to that of the stomach in a worn-out drunkard. It requires stimulants; but they must be nicely managed,

else they will be productive of mischief instead of utility.

The next most salutary remedial process, is to keep up a regular peristaltic motion in the bowels, and excite the mouths of the excretory ducts of the liver, which will tend to eliminate the viscid and depraved secretions from that organ itself. I have found no medicine better adapted to this purpose than the following:

R. Ex. Colocynth. Comp. ʒj;
Calomel ppt. gr. xx.
Ant. Tart. gr. v.
Ol. Carui, gt. iv.

Fiant pillul. no. xxx.

One or two of these pills, taken occasionally at bed-time, will move the bowels gently next morning; carry off diseased, and promote healthy secretions of bile; and will be found to obviate, in a wonderful manner, that mental despondency, and long train of nervous symptoms, so constantly attendant on this complaint.

Our attention is next to be directed to the cuticular discharge. This is never to be forced by heating or stimulating, but an insensible halitus promoted, by the most gentle means. Moderate exercise, particularly gestation, as determining to the surface without fatigue, is highly useful. A sea voyage, combining these advantages with a more equable temperature, and keeping up a slight nausea, as it were, by which the cutaneo-hepatic secretions are increased,

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will be found beneficial where it can be commanded. The swing, an easy, and perhaps no bad substitute for gestation, or a sea voyage, I found very useful in my own case. I was led to try it for amusement only, and to dispel the ennui of protracted convalescence. It certainly has considerable effect on the skin—powerfully determines to the surface—and relieves those internal congestions so connected with, and dependent on, torpor or obstruction in the liver. The assiduous and daily application of the flesh-brush over the hypochondriac region, will be found to excite the healthy action of the biliary organ in no mean degree. Blisters, or the more permanent drain of a seton in the side, where there is much local uneasiness, will likewise be had recourse to with advantage.

Flannels are essentially necessary, more particularly in the variable climate of this country, with the minutest attention to the warmth and dryness of the feet, especially where the bowels are tender. In torpid livers, where costiveness is a common symptom, flannels, by increasing the cuticular discharge, appear at first to constipate. But here, as in the costiveness arising from a sea voyage, no ill effects whatever are induced; on the contrary, the digestion improves, evidently from the biliary secretion being augmented in both cases.

On the other hand, where hepatic obstructions exist, with determination to the bowels, keeping them in an irritable state, as in my own case, the utility of flannels becomes both real and apparent.

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In addition to the general use of flannel, the local application of a bandage of the same round the waist, in imitation of the Indian *cummerband*, is in these cases peculiarly advantageous. The native soldiery in India often contract bowel complaints from incautiously throwing off the *cummerband*, when heated on a march.

I could state numerous instances, where the worst consequences resulted from negligence in this respect. The tepid bath, using the utmost caution in avoiding a subsequent chill, will evidently be serviceable, on the same principle; as well as the warm mineral waters taken internally, as recommended by Dr. Saunders. The night air and late hours, are to be most religiously avoided; and a rigid temperance, amounting to abstinence, enjoined. In short, he who labours under obstructed liver, and hopes to protract his existence with any kind of comfort to himself, must abandon what are called the "pleasures of the table;" but which are, in reality, the bane of human health. Quantity is doubtless of more consequence than quality; yet raw vegetables and pastry, from their increasing acidity and rancidity in the stomach, are very generally detrimental. Tender animal food, in small quantities, with well-baked bread, or ship-biscuit, forms perhaps the most easily digested aliment in such cases. In India, and I believe in Europe, rice and curry will be found a salutary dish. The stimulus of the spice is very different from that of spirits or wine; and the rice is, without exception, the

most unirritating, nutritious, and easily digested vegetable, which the bountiful bosom of the earth produces.

With repect to drink, although I certainly would recommend to my patient the laconic Greek prescription in the pump-room at Bath; yet I fear that most of those returning from the East and West Indies, afflicted with hepatic complaints, while they readily allow that "water is best,"—nevertheless, unanimously agree, that wine is most palatable. If the latter cannot be dispensed with, the acid and astringent kinds, at least, are to be rejected. Malt liquor will seldom agree, and spirits ought to be proscribed, as so much poison. I know well, that a dilute mixture of brandy and water has an indescribably soothing effect on the stomach and bowels, in these cases, and *seems* both to agree best, and prove most useful; but I am fully convinced, it ultimately injures the tone of these organs, and increases the mischief in the liver. "Water, I repeat it, is best."

All the preceding remarks pre-suppose that a change of climate has been effected;—for such is the state of the biliary organ, after repeated attacks of Hepatitis, or a long residence between the tropics, that the most active of the above-mentioned remedial means will give but temporary relief, while the original cause continues to be applied.

I shall elucidate this more fully hereafter, when treating on dysentery. And yet the removal from a tropical to a European climate, requires caution. Nature abhors extremes and

sudden vicissitudes. It certainly is dangerous to return to this country in winter, as I myself experienced. I landed in January, and before the end of February, I had a complete relapse of Hepatitis, and its accompaniment, flux.

Those who cannot undertake the long and expensive voyage to Europe, should endeavour to change a continental for an insular situation in India. Pulo Penang, or Prince of Wales' Island, though within six degrees of the equator, enjoys a milder air, and a lower range of temperature, than any of the presidencies. Here are neither the great vicissitudes of Bombay, the marsh effluvia of Bengal, nor the scorching heat of Madras. The climate is very salubrious. On the mountain, which occupies a great part of the island, and is of considerable elevation, bungalows are erected, open to the sea and land breezes, where the thermometer ranges between 70 and 80 degrees, and where the heat is never reflected or oppressive. From this mountain, too, the most romantic, extensive, and picturesque views, are presented to the delighted eye, contributing greatly to mental amusement and corporeal renovation.

A temporary residence on that beautiful island, during a painful illness and tedious convalescence, has produced in my mind a strong local attachment towards it, and a vivid recollection of its enchanting scenery.—

> Illa terrarum mihi præter omnes
> Insula ridet, ubi non Hymetto
> Mella decedunt, viridique certat
> Bacca venafro;

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Ver ubi longum, tepidasque præbet
Jupiter brumas; et amicus Aulon
"Gracili palmæ,"* minimum falernis
Invidet Uvis.

The Malayan peninsula, from its being a narrow slip of land, washed on both sides, and nearly encompassed by the ocean—constantly covered with verdure, and open to the sea breezes, is blessed with a milder and cooler air than any continental part of India between the tropics, and bordering on the coast.

Columbo, in the Island of Ceylon, has also many local advantages, that render it extremely salubrious to Europeans, and consequently a convenient and easy retreat from the opposite burning coast.

The Cape of Good Hope, however well adapted to the refreshment of a crew, after a long voyage, by its abundant supplies of animal and vegetable food, is by no means calculated, in regard to climate, for the recovery of hepatic or dysenteric individuals, returning from the East. The daily atmospherical vicissitudes, at this celebrated promontory, are very great indeed, [25 or 30 degrees] and consequently injurious where the bowels are at all affected. I shall only mention one instance corroborative of this assertion.—

* The palma coccifera, or cocoa-nut tree, whose milk is equally delicious and salutary, flourishes here in the greatest perfection, and may vie with the falernian juice in every good quality, without any intoxicating effect.

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His Majesty's ship Albion, on her late return from India, having touched at the Cape, sent a number of people to the hospital, afflicted with chronic bowel and liver complaints. By the time of her departure for England, however, several of these had died, and all the others returned in a worse state than when they went on shore. This fact is worth attending to; and deserves to be kept in mind by the valetudinarian.

The climate of St. Helena approximates more to that of Europe, than the climate of any other intertropical situation. A rock, only twenty-seven miles in circumference, surrounded by an immense equatorial ocean, above the level of which it projects 3000 feet; whose summit is covered with perpetual verdure, and cooled by perennial breezes, must enjoy a serenity of air, and evenness of temperature, far beyond any part either of the Indies or Europe. The medium height of the thermometer is 64°, and atmospherical vicissitudes by no means great or sudden. At Plantation-House, the mercury does not rise higher than 72° in summer, nor fall lower than 55° in winter. A temporary stay at this island would probably be attended with a salutary seasoning, preparatory to exposing the debilitated frame to the rude inclemencies and transitions of northern regions. The scenery, too, of the *interior*, is as beautifully romantic, as that of the *exterior* is stupendously dreary and barren. The society, however, is confined; and forms a striking contrast with the social ease and unbounded hospitality of the

East.—But alas! it is a melancholy truth, that in the complaint I have been describing, a surprising mental despondency, or propensity to brood over our misfortunes, pursues us through every clime!—

Scandit æratas vitiosa naves
Cura!—Quid terras alio calentes
Sole mutamus?—*Atrabiliosus*
Se raro fugit!

SYMPATHETIC CONNECTION BETWEEN THE MENTAL AND HEPATIC FUNCTIONS.

The manner in which this mental depression becomes connected with derangement in the hepatic function, is a subject of curious inquiry. It is not a little singular, that two of the most important organs in the human body—the lungs and the liver, when in a disordered state, should exhibit a striking contrast in their effects on the mind. Thus, even in the last stage of phthisis,

"Hope springs eternal in the *hectic* breast;"

and the final catastrophe stands a long time revealed to every eye but that of the patient,—who

"Never tastes of death but once."

Mental and Hepatic Functions

In hepatic diseases, on the other haud, like Shakspeare's cowards, we

"Die many times before our death."

It is a curious fact, that syphilis, a disease which can only be cured by that medicine, on which we place our principal dependence in Hepatitis, is likewise attended with a similar despondency, but in a much less degree. There certainly is a greater connexion, or reciprocal influence, between the mental and hepatic functions, than is generally known or suspected.

I was first led to direct my attention to this interesting subject by a train of circumstances, which it may not be quite irrelevant to relate.

Previously to my visiting a tropical climate, and for some time after leaving the schools of medicine, I had prided myself on a remarkably steady hand, and a certain adroitness in wielding the dissecting knife, which not a few young gentlemen consider as almost the only requisites for advancing them to future celebrity, especially in the army and navy. In addition to these, however, the Nosology of Cullen, which I had at my fingers' ends, enabled me to divide, subdivide, and discriminate the minutest shades of diseases—without even seeing them; while the systems of Brown and Darwin made all smooth and easy, in regard to the treatment. In short, I had so many cures for every ill which "flesh is heir to," that I considered any failure as attributable to negligence alone on my part. Thus equipped, I commenced my medical

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career; but a very few years' experience convinced me, that I had made rather a hasty estimate of the facility with which THEORY and the METHODUS MEDENDI are reduced to practice.

Still, however, I consoled myself with the reflection, that although my success in physic was not, at first, quite equal to my too sanguine expectations, yet, my anatomical knowledge, and manual dexterity, would amply compensate for these discouragements, should fortune throw in my way an opportunity of exhibiting in this department of my profession. My chagrin may be easily conceived, when, after a short residence between the tropics, I perceived a train of symptoms advance, which bade fair to demolish these airy structures, erected by my imagination! Without the slightest propensity to intemperance, I found my mind become clouded and less cheerful; my temper more irritable; my judgment less clear aud decided, accompanied by agitation and tremor at every unexpected event. In short, I found myself assailed by a whole tribe of those morbid feelings and sensibilities,—those "miseries of human life," which we usually designate by the terms, nervous or hypochondriacal.

Under these circumstances, instead of courting difficulties, as formerly, I dreaded their occurrence. If a man, for instance, fell down a ladder, or was wounded, the report threw me into such a state of perturbation and alarm, as rendered me incapable, for some minutes, of giving the necessary directions; and by continually brooding over and reflecting on these

ailments, I aggravated them every hour, until I became a complete hypochondriac!—

"Vulnus alit venis, et ceco carpitur igni.

With all the terror, though none of the guilt of Macbeth, I have repeatedly exclaimed—

"How is't with me, when ev'ry sound alarms me?"

During this gloomy period, I was threatened with a dysenteric complaint; and as I had severely suffered from this before, I anxiously and speedily excited a ptyalism, which ran to a much greater height than I reckoned on, and kept me for some weeks in considerable distress and pain, from ulcerations of my mouth and tongue. The complaint entirely disappeared, and my appetite returned; but, for obvious reasons, I was unable to take any thing but liquids for food, while my mouth was in the state described. Nevertheless, after sustaining the pressure of the disease, as well as of the remedy, and the long abstinence that succeeded both, I was most agreeably surprised to find my hand once more steady; my mind firm, and capable of pursuing my usual studies: in short, the whole tribe of "blue devils" dispersed, and both my mind and body restored to their wonted energy, and equal to every emergency!—

"The gloom dissolves
In empty air!—Elysium opens round;
A pleasing phrenzy buoys the lighten'd soul;
And what was difficult, and what was dire,
Yields to my prowess and superior stars!"

Sympathise.

This sudden and unexpected change forcibly drew my attention to an investigation of its cause; and it was a long time before I could unravel the intricacy, even to my own satisfaction. It is sufficiently evident, that the nervous or hypochondriacal symptoms with which I was harassed, previously to this epoch, could not be purely *mental*, since they were removed by a medicine, whose operation was directed to the liver in this instance, and which moreover is accused of producing the very disorders in question. That they arose in fact from an impaired state of the *hepatic functions*, cannot be doubted; but *how* the latter can produce the former, is not so easily explained.

Experience has shewn, that both *excess* and *deficiency* in the biliary secretion affect the mental functions, though in a somewhat different manner. The former seems to exert its influence in two ways, viz. by its irritation in the primæ viæ, and by its absorption into the circulating system.

That vitiated bile irritates the stomach and bowels, is admitted by all; and that part of it is occasionally absorbed, or regurgitates into the circulation, is equally evident, from the appearance of the eyes and countenance. The mental effects in both these cases are characterized by irritability, and what is properly called a choleric disposition; often, however, accompanied by the deepest dejection of spirits, amounting almost to despair, where no other adequate cause exists.

On the other hand, the defective secretion of bile seems to operate on body and mind in three

ways, viz. By the insipid quality of the bile—by its absorption—and, simply, by its paucity: the mental effects characterized in such cases by melancholy or despondency. The insipidity of the bile in those diseases where the secretion is lessened, as in hypochondriasis, chlorosis, &c. &c. has been noticed by Dr. Saunders and others. The consequence of this will be a torpor throughout the system at large: hence costiveness—imperfect digestion, chylification, sanguification, &c. ensue; the influence of which on the mind is obvious.

The bile, however, is not always insipid in quality, where it is deficient in quantity. In those cases where it proceeds from structural alteration of the liver, or succeeds violent diseases of that organ, the bile is occasionally as vitiated and acrid, as where excessive secretion is going on. This takes place especially when those causes are applied which formerly produced great excitement in the extreme vessels of the vena portarum; as, high temperature—exercise in the sun—debauches—violent gusts of passion, &c. &c.

In hot climates, indeed, I have thought that an inflammatory state of the liver was sometimes induced, or at least increased, by the acrimony of its own secretions. It has frequently been remarked by others, and felt by myself, that after brisk doses of calomel and cathartic extract, the bilious evacuations have produced a sensation, as if boiling lead were passing through the intestines. The freedom of spirits, or sensorial energy, that succeeds, can only be appreciated by those who have experienced such dis-

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gorgements of vitiated bile! Every one has observed how diseased secretions, from the internal surface of the urethra, occasionally inflame and ulcerate the preputium and glans penis, if the greatest care be not taken to defend them by cleanliness: can we doubt that something of the same nature may take place in the intestines, and even in the ducts of the liver itself, where the biliary secretion is extremely depraved and acrimonious?

But to return. Of the little bile secreted where these causes are not applied, a considerable share is absorbed while it lurks in the ducts of the liver, or in the primæ viæ. Hence, the residue becomes viscid, and obstructs those very ducts through which it ought to flow without interruption.

The non-secretion, or diminution in quantity of the bile, is, as I have already shewn, a natural consequence of previous excess. Its origin may be traced to those very periods of superabundant secretion—or rather, to the intervals between them. These intervals are at first short, but gradually increase, till they become far predominant.

It is manifest that during these periods of torpor in the liver, and afterwards, when that organ is almost constantly in a torpid state, the blood brought by the various branches of the vena portarum, although its progress may be impeded, eventually passes on to the cavæ hepaticæ, without losing that portion, or those component parts, which, when properly elaborated, form healthy bile.

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Here, I conceive, is a fertile source for aggravating, if not engendering, many diseases. If it be asked, why these "*elementa biliaria*" should be more injurious to the constitution, by remaining in the circulation after the blood passes the liver, than by their previous residence in it? I answer, that it is highly improbable, for many reasons, that they should have existed in the same state [if they at all existed] in the general *arterial*, that they afterwards do in the *portal* circulation. Else, why should Nature deviate, in this instance alone, from her usual mode of sending arterial blood to secreting organs? Why not have enlarged the hepatic artery, and allowed the vena portarum to open into the inferior cava?* "Whatever changes," says Dr. Saunders, "are induced in the blood, in passing from the arterial to the venous condition, those changes furnish the principles which adapt the blood more completely to this process;"—viz. biliary secretion, p. 51.

When we contemplate the sources from which the vena portarum draws the vast flow of blood for biliary secretion, we are struck with the unusual, and as it were, mysterious manner, in which Nature seems to veil her operations in this process. We see, for instance, a large viscus, the spleen, placed opposite to the liver, without any apparent office; and its venous

* The *lusus naturæ* found in a child, by Mr. Abernethy, is no argument whatever against this; and its correctness is questioned by Dr. Rees—On Diseases of the Stomach, p. 50.

blood, instead of falling into the inferior cava, passing on to circulate through another large organ, the liver!—Can this be for no purpose?

There are sceptics in medicine, as well as in religion, who doubt of every thing that does not admit of demonstration.

The experimental physiologist may dexterously lay open the abdomen of a dog, and draw samples of blood from the splenic vein and splenic artery. He may compare these together—torture them with acids, or analyse them in various ways; but, because *he cannot discover* any chemical difference in them, are we to conclude that Nature was a bungling mechanic, who, not finding any thing to fill up the left hypochondre, stuffed in a spleen, merely as a locum tenens, and for no earthly purpose—unless it was to furnish ague cakes for the Lincoln and Walcheren intermittents!

Who would expect the following sentiment from the illustrious Dr. Baillie?—"The gall-bladder does not serve any necessary purpose in the body." *Morbid Anatomy*, 3*d ed. p.* 251. If this be the case, Nature was worse than a fool, in appending to the liver (which, of itself, is liable enough to disease) a bag, for the very *unnecessary* purpose of collecting gall-stones, that occasion the most excruciating torment to which suffering humanity is exposed! But we credulous mortals, who believe that the constructor of our frames knew what was *necessary* almost as well as ourselves, may take it for granted, that the gall-bladder—aye, and the

spleen too, have their uses ;* and that the blood in the portal circle is *peculiarly* impregnated with the elements from whence the bile is afterwards formed. Boerhaave and Morgagni having entertained a supposition, that jaundice was sometimes produced by a suspension of the biliary secretion, and that the bile passed on, and suffused the skin, Dr. Saunders has not unjustly ridiculed this opinion, "which," says he, "is founded on the mistaken notion, that all *secreted* fluids pre-existed in the mass of blood." Perhaps he himself, however, verges towards the other extreme, of not even admitting their *elements* to pre-exist, as appears by the following quotation:—"It is now generally understood and believed, that the blood is the *pabulum* or source of all the secretions, and that the glands through which it circulates, change its properties, every one according to its peculiar mode of action; so that the secretions may be considered as new fluids, formed by their respective glands."—p. 106.

I conceive that the meaning of the above passage is simply this; viz. that the action of a gland—for instance, the liver, consists, not in selecting and combining certain elementary

* If my ideas respecting the ratio symptomatum in fevers, have any foundation in truth, the spleen, as an organ of preservation, when the equilibrium of the circulation is broken, becomes of important use in the animal economy. Hence its frequent enlargement after obstinate intermittents, where the balance of the circulation experiences such rapid and violent oscillations. Vide note to page 96.

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parts of the blood, which are peculiarly adapted to the nature of that particular secretion, but merely in *converting* so much blood into so much bile. If this be the case, to what purpose has a greater afflux of blood been sent to the liver than is necessary for its nourishment, and just to furnish the quantity that is to be *transmuted* into bile? Surely, the hepatic artery alone is equal to this task. But, on the contrary, we observe a copious flood of venous, and a strong current of arterial blood, rushing through the largest gland in the human body; one, indeed, whose size is nearly equal to all the others put together; and for what?—to convert about five or six ounces, daily, of the passing stream into bile, while the rest runs on, unchanged, to the source of circulation!

"Parturiunt montes—nascetur ridiculus mus!"

But this doctrine is not, perhaps, so "generally understood and believed," as Dr. Saunders imagines. A modern periodical publication, of the very first respectability, and the widest circulation, emanating from the focus of medical knowledge, and conducted by a physician of great eminence, who has ample opportunities of becoming acquainted with the physiological opinions of the day, maintains a very different doctrine. The Edinburgh Medical and Surgical Reviewers, in the number for April 1810, page 196, while examining certain articles on secretion in the Philosophical Transactions, deliver their sentiments in the following words: "As different salts, dissolved in the same vessel,

chrystallize apart; so, in the animal body, all the component parts of the secretions are mingled in the blood, and go to be deposited, each in its respective and proper part:—the osseous matter to the bones, the synovia to the joints, the *bile to the liver*, the urine to the kidnies."

Under the article "Gland," in Rees' Cyclopœdia, (the most ably conducted work of the age) we find the following paragraph.—Speaking of assimilation and secretion, it is observed, that "they resemble each other in their commencement, in which the organ, by some powers of a nature entirely unknown to us, but peculiar to living bodies, and forming part of that complicated notion which we express by the term vitality, *selects from the blood such principles as suit its nature or functions.*" With these last sentiments I entirely agree.

Indeed, Dr. Saunders himself, in a note to the last edition of his work, seems to abandon, in some measure, his former position. Alluding to this pre-existence of bile in the blood, he says—"though there is no reason to believe this, in the case of common jaundice, which is universally, I believe, found to depend on something that prevents the bile, when formed, from getting into the duodenum; yet, from some late experiments, it would appear probable, that under *certain morbid states of the body*, the blood may acquire a bilious appearance, independent of absorption, or regurgitation from the liver." —page 105. It is hardly necessary to remark, that this must be from non-secretion.

The same author has justly and elegantly observed, that "Nature, though simple in her

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means, is always complex in her objects; and that there is probably no organ in the human frame, which does not answer a double purpose."

May we not then conclude, that the liver secretes a fluid, which is highly useful to digestion and other processes connected with the chylopoietic viscera, and whose *elements* would be injurious to the constitution, did not such secretion take place? The illustrious Bichat seems evidently to hint something of this kind in the following passage:

"From serving as the point of termination for the abdominal system of black blood, as the lungs do for the general system of the same description, the liver derives a degree of importance which does not belong to *any other* secretory organ. The disproportion between the size of the organ and the quantity of fluid it secretes, has led some authors to suspect that the organ must have a further office; and this suspicion seems to be *almost a certainty*. We are altogether ignorant what the *other use* of the bile may be: probably it is connected with the abdominal system of black blood. The following considerations prove, that it must be a very important one: The organ exists in almost all classes of animals, even where some other important viscera are very imperfect. Many of the passions affect it: some of them have an exclusive effect upon it. It performs, in disease, as prominent a part, as any of the important viscera of the economy. In hypochondria, melancholia, &c. its influence is very considerable. We

know how easily its functions are disturbed. The yellowish tint in the face, in many of these affections, must be produced by the same cause which in a higher degree produces jaundice.

The affections of this organ, observed after death, are more numerous than those of any similar part. It is a matter of common observation, that this organ has a great influence on the temperament. Its predominance communicates to the external habit of the body—to the functions—to the passions—even to the character, a peculiar tint, which was observed by the ancients, and has been confirmed by modern observation. Nothing like this can be observed of the other glands. With the heart and brain, this is the part first formed: its developement precedes that of all other organs, and it is incomparably superior to that of all other glands." Anatomie Generale, tom. 1, page 459.

It has been remarked, that no difference can be perceived between the blood in the portæ, and in the cavæ hepaticæ. It must be exceedingly difficult to ascertain this with precision. First, because the sedative effects of pain and fear on an animal, while under a cruel experiment, must, in all probability, suspend entirely the biliary secretion at such times; and consequently, the blood would pass unaltered to the heart. Secondly, a similar suspension in general takes place long before death; so that samples of blood, after this event, would afford equally fallacious tests.

Moreover,—" As physiologists are not agreed respecting the essential difference between arte-

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rial and venous blood,"* it follows, that did it not lose its florid colour in passing from the one to the other, and again acquire it in the lungs, the sceptical physiologist would have denied that any change whatever took place, as he could not detect it by acids and alkalies.

The application of this remark to the blood's passage through the liver, will be readily anticipated, viz. that as it is not exposed to the action of the atmosphere, so as to affect its *appearance*, it loses that distinction which *seems* to be the only characteristic acquired in its passage through the lungs.

There may, therefore, be as great changes produced in the blood by the hepatic, as by the pulmonic process; but for the reason assigned, they are not visible to the eye—chemistry being unable to detect any "essential difference" in either case.

But it may be asked, Can these "primordia bilis" be more detrimental to the constitution than bile itself, secreted, and afterwards absorbed?

I answer, that the symptoms attendant on diminished secretion, are much more serious than those which accompany the absorption of healthy bile, as in simple obstruction of the hepatic duct, producing a suffusion on the skin. Analogy likewise corroborates the difference between non-secretion and absorption. Thus—"When the secretion of semen is prevented, either by accident, disease, or unnatural mutilation, the whole system

* Saunders.

is changed, the voice weakened, the beard checked in its growth, and the sternum expanded; in short, the appearance in every respect approaches that of a female. These changes have occurred when the testes have been destroyed after the period of manhood, though in a less degree." * If we look to the opposite effects, viz. absorption, or regurgitation, throughout the animal kingdom at certain periods, particularly as exhibited on a grand scale in the stag species, during the rutting season, when the flesh even is tainted with the flavour of the semen, we shall be astonished at the difference.

And here I may ask, if the action of a gland—for instance, the testis, be merely the conversion of so much blood into so much semen, how comes it, that the loss of a few ounces of the latter fluid debilitates an animal more than the loss of as many pounds of the former? It will doubtless be replied, that the nervous agitation, or convulsion, attending the discharge, produces the debility; but will this fully account for the weakness and languor succeeding nocturnal, and in many instances, diurnal emissions, without either a dream, or any consciousness?

But it must also be remembered, that although the absorption of *healthy* bile, as in jaundice, from accidental obstruction of the ducts, be not productive of much mischief, yet the absorption of *vitiated* bile is accompanied by a train of effects bearing a considerable analogy to those from non-secretion; and, so far, elucidating their nature.

* Parr.

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As I have shewn, therefore, that with irregular and diminished secretion, there is always a degree of vitiation, absorption, and irritation, I beg leave to designate their united effect on body and mind, by the term "*Morbid biliary irritation, or influence.*"

I conceive that this is quite equal to the task of originating those mental maladies, which in their turn *re-act* on the liver, stomach, and intestines, disturbing their functions still farther, or increasing their torpor, as well as of the whole system, by sympathy; producing, at length, the extensive catalogue of dyspeptic, hypochondriacal, and perhaps hysterical complaints!

Is it not this "non-secreted bile"* which gives that peculiar sallow complexion to Europeans long resident in hot climates, so distinguishable from a jaundiced suffusion of absorbed or regurgitated bile; and which is probably the first shade that Nature effects, in bending the colour to the climate? Europeans do not begin to assume this *sallow* tint, till the period of superabundant secretion is long past, and till atony and diminished action in the hepatic system have commenced. Indeed it is very possible, that what at first produces such commotion and inconvenience in the animal economy, would, in the course of a few generations, effect those corporeal changes in the exterior, which ultimately counteract, in a considerable degree, the baleful influence of the climate itself. To be more explicit. The derangement

* By "non-secreted bile," I mean the elements from whence bile is formed.

in the hepatic functions, originating, indeed, through sympathy with the skin, affects in its turn the tincture of that skin, by means of absorbed and non-secreted bile; and these yellow and sallow tints, acted on by the rays of a tropical sun, gradually verge, in the course of generations, to a sable hue. This change of colour, and, in some degree, of texture also [for the rete mucosum is *thicker* in Indians than Europeans] renders the exterior of man less sensible to atmospherical heat; in consequence of which, a more mild and uniform action in the perspiratory vessels succeeds, and by sympathy, a correspondent equilibrium in the secreting vessels of the liver. Thus the skin, which was the first cause of disordered secretion in the liver, becomes ultimately the grand protection of that organ, and the derangement itself, in process of time, creates its own antidote! This is quite conformable to the known wisdom of Providence, and to the unceasing exertions of Nature, in remedying what she cannot entirely prevent.

This is a different doctrine from that of Dr. Smith: he attributes the black colour of Indians to the superabundant secretion of bile, and its suffusion on the surface; but that will not stand the test of examination. He does not take *non-secretion*, or the elements of bile, into the account; nor does he trace any connexion between the hepatic and cutaneous functions. May not the disposition to ulcers in hot climates, and among drunken sailors in our own climate, be accounted for by this *cutaneo-hepatic sympathy?* In the first case, the *cutaneous* vessels are debilitated by the heat, and the *hepatic* by sympathy. In the second case, the vessels of the stomach and liver

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are debilitated by *drink,* and the *cutaneous* vessels by sympathy.

The application of the foregoing arguments to my own case, is easy, and requires few words.

The alternate periods of over-excitement and torpor, often aggravated by imprudent exposure to the intense heat of the sun by day, and the damp air of the night, produced, at length, considerable derangement in the hepatic functions; and subsequently, through the medium of the "morbid biliary irritation" already pointed out, in the mental energies. The nervous symptoms which succeeded, created that alarm and anxiety in my mind, which now re-acted on the body, increasing the torpor in the liver, stomach, and intestines; giving birth to the whole tribe of hypochondriacal complaints. In the end, obstruction and congestion in the liver, with deficiency and vitiation of its secretion, exhibited themselves in the form of flux; a very common index of Hepatitis in India.

The cure illustrates and confirms the whole.—Mercury communicated energy once more to the liver, and restored its functions—healthy bile flowed into the intestines. The brain and nervous system were freed from the *elementa biliaria* which floated in the circulation during the torpor, obstruction, and derangement in the liver; in consequence of which, the mental faculties, and corporeal functions, regained their accustomed vigour.

The danger I had so narrowly escaped, and the gloomy period which preceded it, taught me to appreciate the value of health, and investigate,

with a strict scrutiny, the means of preserving it. But the subject above alluded to deserves some further consideration.

Although the complaint I have described was, in this instance, attributable to climate alone; yet I had afterwards opportunities of seeing similar trains of symptoms brought on, in numerous cases, in a great measure by other causes. Of these I shall only notice INTEMPERANCE and the DEPRESSING PASSIONS. When they are superadded to the effects of a tropical climate, the fatal catastrophe advances with gigantic strides! I shall consider them in the prophylactic part of this essay; and in the mean time just glance at their operation, especially that of the latter, on the constitution at home.

The effects of intemperance in spirituous liquors, on the liver and its functions, are not only known to every Tyro in the profession, but are proverbial in the mouths of drunkards themselves: nothing, therefore, need be said on that subject. But that the "depressing passions" should produce certain derangements in the hepatic functions, which, re-acting on the mind, give rise to, or aggravate the whole proteian host of hypochondriacal, hysterical, and nervous disorders, is by no means generally admitted; though the doctrine will probably gain ground.

The fair sex, from their inactive lives, sedentary habits, and acute sensibility, are the principal victims; yet, in so commercial and manufacturing a country as ours, a considerable proportion of the male population must be em-

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ployed in occupations little more athletic than those of the female.

But women, while they possess an infinitely greater share of sensibility than men, are exposed to a much wider range of the depressing passions; many of which are almost exclusively their own. Thus, to crosses in love *before,* and unrequited affection *after* marriage, they seem to be heirs by birth!—

> "Ah me! for aught that ever I could read,
> Could ever hear by tale or history,
> The course of true love never did run smooth!"

Over their misfortunes, then, whether real or imaginary, they brood in silence, and often in solitude; for the monotony of domestic avocations cannot often banish reflection; but on the contrary, more frequently, in such cases, excites it.

The first effect of these depressing passions is felt in the organs concerned in digestion—atony in the stomach—torpor in the liver and intestines. The aliment passes into the duodenum imperfectly digested—it there meets a scanty supply of ill-conditioned or insipid bile, and pancreatic juice. Under these circumstances, the progress of the chyme through the convolutions of the intestines must be slow, and the chyle imperfectly eliminated. Fecal accumulations take place; and probably the fermentative process goes on, for want of bile, with an extrication of air, which gives rise to distressing colic and borborigmi. To procure re-

lief from these, the spirituous tincture and cordial have often been the harbingers of more dangerous indulgences, and increased the malady which they were intended to alleviate!

From the sedentary habits of the sufferer, and inattention to the calls of Nature, the cells of the colon become distended with sordes, detrimental to the system at large, and adding to the bad effects of costiveness, which is an inseparable attendant. During this time, the "morbid biliary influence," acting on the sensorium, gives birth to that tribe of "thick-coming fancies," which, moulded by age, temperament, education, and habits of life, spring up the prolific and thriving progeny of HYSTERIA.

The two methods of cure which have been found most effectual in these complaints, elucidate this reasoning. The first is, to break the original link, connecting cause and effect;—to

> "Raze out the written troubles of the brain;
> Pluck from the memory a rooted sorrow;"

And, by a perpetual change of scene, variety of amusement, and the exercise of gestation, withdraw the mind, as it were, from operating to the destruction of the body. This, however, is an expensive remedy, which few can purchase. The other is more easily obtained, and perhaps not less effectual.—It is, in the language of the same poet, to

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"PURGE the stuff'd bosom of that perilous stuff
That weighs upon the heart."

By a careful course of cathartics, the bowels are cleared of that load of fecal and other matter, with which they were oppressed. Healthy bile is thus solicited into the intestines, instead of having its elements floating in the circulation. This natural stimulus promotes chylification; which, strengthening the whole material fabric, communicates energy to the mind, till at length, the bloom of health once more revisits the sallow cheek of despondency.

The same reasoning will apply to chlorosis and chorea. This "biliary influence"—this "non-secreted bile," is the cause of that "green and yellow melancholy," which feeds on the "damask cheek" of the chlorotic girl. If this be abstracted by active purgatives, and its place supplied with healthy chyle, the "lack-lustre" eye will yet be the seat of expression, and the energies of Nature will be directed to an important organ, the suspension of whose office was rather the consequence than the cause of chlorosis.

So, in chorea, this biliary taint in the blood, is the "*liquor aliquis in nervos irruens*," which Sydenham considered the cause of the disease; and purgatives have proved its cure, on the same principle as in chlorosis.

But the lords of the creation are not exempted from the wide-spreading effects of hepatic derangement. From our large manufacturing towns, the foci of sedentary habits, intemperance, and the depressing passions, its influence

may be traced through every ramification of society. One or two examples will suffice. The whole of the literary world, from the poet in his garret to the learned president in his hall, feel more or less of its effects. This deficiency in the secretion of bile, the consequence of mental exertion and corporeal inactivity, is evidently the "morbus eruditorum," which

"Sicklies o'er, with the pale cast of thought,"

the countenances of the studious, who waste their hours and their health by the midnight lamp! To them I need not describe the malady; they are too familiar with its various symptoms. But few of them are aware, how far material causes can influence intellectual ideas. If I wish to exert, on any particular occasion, the whole force of my memory, imagination, perception, and judgment, I know, from repeated experience, that by previously emulging the liver and its ducts, and carrying off all bilious colluvies from the alimentary canal, by mercurial purgatives, which also excite a brisker secretion in the liver, I am thereby enabled to avail myself of those faculties above mentioned, to an infinitely greater extent than I otherwise could. This is no theoretical speculation: it is a practical fact. It may help to explain the great inequality which we often observe in the brightest effusions of fancy; and shew us, why even the immortal Homer sometimes nods.

Lastly, certain species of mania itself, seem frequently connected with derangement in the

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biliary secretion. "The affinity of the complaint," (periodical insanity) says M. Pinel, "with melancholia and hypochondriasis, warrants the presumption, that its *seat*, primarily, is almost always in the *epigastric* region; and that from this centre are propagated, as it were, by a species of irradiation, the accessions of insanity."

"In some inebriates," says Darwin, "the *torpor* of the liver produces pain, without schirrus, gall-stones, or eruptions; and in these, epilepsy or *insanity* is often the consequence." The belief, indeed, is as old as Hippocrates, who remarks—"Qui vero *a bile* insanit vociferator est, et maleficus . . . . . Calescit autem præ bile, ubi *ad cerebrum impetum fecerit* ex corpore per venas hœmatitidas."—De Morbo Sacro. And Celsus, enumerating the symptoms of impending diseases, remarks—"At si longa tristitia cum longo timore et vigilia est, *atræ bilis* morbus subest."—lib. iii. It was from this idea that hellebore acquired its celebrity.

"Danda est hellebori multo pars maxima insanis."*

In tracing mental maladies to corporeal sources, we ought not to press too close on the confines of immateriality; nor do I conceive that we have any just grounds to believe, that "mattter, peculiarly arranged, may think."†

* Avaris, Horace says.

† *Haslam on Insanity*, p. 240; which, indeed, is copied verbatim from Locke.

When the medium through which *mind* manifests itself, becomes deranged, the *manifestation* must also suffer; in which case, there is no necessity to separate the office of thought from the immaterial principle.—

Mens agitat molem, et magno se corpore *miscet.*

DYSENTERY.

Sec. 7.—It must have been sufficiently obvious, that, throughout this essay, I have not attempted to exhibit many specimens of erudite research among ancient authors, for their sentiments concerning those diseases which I had occasion to notice. I am by no means anxious that this should be considered a studied neglect, or be ascribed to design rather than ignorance; but I beg to express my humble opinion, that however worthy the ancients may be of *perusal*, it is not at all necessary that they should be *re-written* in modern publications. This, however, is not the opinion of my illustrious predecessor, Dr. Moseley, who, in pure compassion towards the ignorance of army and navy surgeons, has kindly furnished a sort of digest, or compendium of "*the most interesting circumstances that occurred to him in the course of his reading on the subject*, [dysentery] *which he flatters himself will be of use to young practitioners in the navy and army, and to residents in the colonies.*"—4th ed. p. 296.

Far be it from me to filch from the learned doctor the fruits of his recondite labours; but, like the hungry *ass* passing through the meadow, I have been tempted (God and Dr. Mose-

ley forgive me!) to snatch, *en passant*, a few mouthfuls of ancient lore from this well-stored granary, attracted by their delicious flavour, and the kind invitation which he has held out to needy authors, "who prosecute their inquiries with the intent to publish them."—ib. In this respect, I have a double claim on the doctor, since we are "*arcades ambo*;" both of us having, as he sublimely expresses it, "traversed the Hygeian zodiac:"—would I could add, "with omnipotent skill!"

The first prescription for the cure of dysentery, from the father of physic, has been honoured with two whole pages of comments by Dr. Moseley. It is equally chaste, practicable, and efficacious.—

"Impudens *scortatio* dysenteriæ medetur!"—p. 301.

It has been my lot to see a pretty large number of dysenteric patients, and—*me miserum!* to have been one myself, more than twice or thrice: I can vouch for the great *inclination* which dysenterics evince towards this modest remedy, and their great *ability* to practise it.

The glyster of Diascorides ought to be emblazoned in letters of gold, for its elegant simplicity. Had not Dr. Moseley quarreled with the College of Physicians, about Cow-pox, it certainly would have had a place in the Pharmacopœia. It is to be used where there are "eating ulcers," and is nothing more than—"*fish-pickle, or old urine.*"—p. 308.

Galen's glysters, in this complaint, were more variegated. They consisted of such ingredients

as the following, viz. *arsenic—burnt paper—brine—lime,*" *&c.*—p. 310. These formulæ prove the degeneracy of the moderns: few dysenteric patients of the present day, with "eating ulcers" in the rectum, would be found with sufficient fortitude to bear these *ancient* "lavemens," even if they were administered with all the skill and adroitness of a French adept.

The abdominal cataplasm of Marcellinus Empiricus, however easily procured by our colonists, would seldom be at hand among our naval practitioners. He advises—"*puppies, frogs, and ducks,* to be applied to the belly, which, he says, will draw out the disease, and they will be killed by it, but the patient will be cured." —p. 315. These would be cheap remedies in China, where the puppies and ducks might afterwards be hashed up for the lower class of natives, who would make no inquiries respecting their death. The same author recommends "*bat's blood*" as a liniment to the abdomen externally, and "*human urine*" to be taken internally! Of the latter remedy there is certainly no scarcity; for, as Macbeth's physician says,

"The patient 'might' minister unto himself."

But Heaven protect the poor bats, if this *bloody liniment* should ever come into vogue! for, if I recollect right, it has been ascertained by naturalists, that of all *quadrupeds* (among which the bat has at last got a footing), this animal is the most scantily supplied with the fluid in question, in proportion to his size. "*Powdered glass*"

is another prescription of the same author, handed down, for the good of posterity, by Dr. Moseley.

Of Avicenna's long catalogue of remedies for dysentery, I shall only cull out three:—"*old, toasted cheese—the stomach of an ostrich dried and powdered—or, milk, with hot stones quenched in it.*"

The last piece of information which I shall extract [for Dr. Moseley may think that I am going to appropriate too many of his "*interesting circumstances*" to my own use] is a very easy remedy for a very obstinate disease. Dr. M. has given it in Latin for the learned, and in plain English for the vulgar; a class, by the by, which the doctor always takes under his particular protection, in opposition to the courtly declaration of Horace—

"Odi profanum vulgus et arceo."

It is from the pen of Carrichterus, and conveys the very gratifying intelligence—"*that making water through a birch-broom will cure impotency!*" "Tunc fac ut Æger superne in hunc scoparum fasiculum urinam mittat; et statim in integrum restituetur."—p. 288. After this, no length of service, or honourable scars received, in the noble wars of Venus, can reasonably deter from approaching the hymeneal fane with confidence, since Medea's caldron has now assumed the familiar shape of a—birch-broom!

But to return from these worse than the ravings of Rabelais, to sober sense. The disease in question is certainly one of great importance

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to be acquainted with, in the practice of fleets and armies. No other complaint—not even excepting fever, so much puzzles the young beginner; and for this plain reason, that in the hour of danger, both books and men distract his judgment, and paralyse his arm, by their diametrically opposite directions! Let any one, after reading Dr. Harty's volume on Dysentery, which gives a fair compendium of the principal modern opinions and practices in that disorder, be taken to the bedside of a patient, and he will be utterly unable to decide, in his own mind, upon the mode of treatment most eligible to adopt!

From this state of anxiety, is he relieved by applying for advice to men? By no means. One inspector tells him, he must consider dysentery as closely allied to *enteritis*,* and depend principally on *venesection*. Another comes round, and says, strictures in the colon, or small intestines, are the cause of dysentery, occasioning a retention of the fecal and other "*peccant matter*;" therefore he must purge—purge. A third assures him, he will purge his patient to death, and that nothing but *sudorifics* can effect a cure. A fourth informs him, that *mercury* is a specific, and unless he raises a ptyalism, he will bury his patient. In this state of suspence, he vacillates from one direction to another, and his success is less, than if he pertinaciously adhered to the worst plan proposed.

* Vide Dr. Wright on the Walcheren fever.

It is true that experience will, *in general,* determine his choice; but many an anxious hour will he spend, in groping his way through this labyrinth of opinions, and many a blunder will he commit in the mean time! Those who have passed ten or fifteen years in the army or navy, and who have had to grapple with dysentery in any extensive way, will readily subscribe to the truth of these remarks.

As there is hardly a disease in the whole range of nosology, more uniform in its nature and symptoms, than dysentery, this discrepancy among authors and practitioners must have originated, I conceive, in consequence of mistaking prominent *effects* for proximate *causes;* and as the means of cure directed against the former have often removed the latter, each individual believed that he alone had found out the true cause and cure of the disease. Thus, one physician examining the body of a patient who died in a certain stage of dysentery, and finding many traces of inflammation, or even sphacelus, in different parts of the intestines, without any strictures, frames his inflammatory hypothesis; and although he employs, as *auxiliaries,* some of the means recommended by others, he makes venesection the *principal* indication—has tolerable success, and becomes quite satisfied that he has hit on the proper plan. Another patient dies at a less advanced period of the disease, or where mortification had not relaxed, and effaced all signs of stricture. He is examined by a different physician, who finds the inner coat of certain parts of the intestines corrugated, thick-

ened, and the canal reduced to a very small diameter, with scybala, or rather fecal accumulations [for those who talk about scybala, have not, I fear, examined the abdomens of many dysenterics,] lurking in the cells of the colon, or flexures of the small intestines, situated above these strictures. Establishing a doctrine on this, bleeding is only had recourse to occasionally; and certain medicines, supposed to have the power of relaxing these spasms or strictures, are exhibited, with frequent laxatives, and success is often the result.

A third person, in examining the bodies of dysenteric patients after death, in hot climates, finds abscess, or other organic derangement of the liver, an appearance very common; and concludes that Dysentery is Hepatitis in disguise. He prescribes mercury, and his success is still greater than that of others; consequently he is *positive* that he alone pursues the true course, and entertains just ideas of the disease.

A fourth, observing that dysentery is always accompanied with defective perspiration, and taking up the idea of Sydenham, that it is a fever turned in on the intestines, has recourse to sudorifics, to turn it out again, and not without considerable success; so that he pities the blindness of those who cannot see that the disease is merely "the perspiration thrown on the bowels."*

* Of all the miserable theories respecting Dysentery, that have ever been engendered in the human brain, the transatlantic one, detailed in the 2d vol. of Medicina Nautica, is

How are we to reconcile these jarring opinions and practices?

Who can direct, where all pretend to know?

In adhering obstinately to any one of these plans we will be often right; but assuredly we will be not seldom wrong. On the other hand, by giving a discretional power to adopt one or other of them, as symptoms may indicate, we confer a licence on the young beginner, for which he probably will not thank us in the hour of trial or responsibility. He who could lay down one fixed principle, which is uniformly to be kept in view, through every case and every climate,—a principle that would explain the phenomena and the cure; who could give *plain and easy directions* when and where we are to lean towards one or other of the apparently opposite modes of treatment, without ever losing sight of the principle in question, or, for a moment, relaxing in the pursuit of that salutary object which this principle points to, would certainly deserve the thanks of the junior branches, at least, of the profession.

In attempting this task, I may perhaps be accused of audacity; but I am conscious that I

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the most ridiculous.—"We shall next shew that septon, [azote] combined with the principle of acidity, [oxygene] is capable, and moreover is, *the only true cause* of this disease." [dysentery.] How Dr. Trotter could transcribe into his work so many pages of absurdity, may well excite our surprise! Were such extravagant reveries necessary to expose the inefficacy of fumigation?

do not advance any thing which I have not repeatedly put to the test of experience, or that can ever be productive of bad consequences. In fact, it is only to connect, by one indissoluble link or principle, the various means which have been found efficacious in this disease, by the best practitioners;—to marshal [if I may be allowed a simile] under *one leader*, many scattered and heterogeneous forces, and thereby wonderfully augment his power, where he finds it necessary to employ them on different points.

I have hinted what I supposed to be the origin of these clashing theories and practices; to wit, the mistaking effects for causes. Thus, if we do find stricture in any part of the intestinal canal, what produced it? This must evidently be the effect of some cause. If we find inflammation there, it is proved to be a consequence, and not a cause of dysentery, from this plain fact, that in original and unequivocal inflammation of the bowels, or enteritis, constipation is almost always present. In hot climates, if we find Dysentery, or [as some will not allow it that name] flux, a pretty constant attendant on Hepatitis, particularly the languid or chronic species of it, it does not follow that Hepatitis is a general concomitant, much less a cause of Dysentery. In many cases of Hepatitis, especially when violent, there is obstinate costiveness; and in numerous fatal cases of dysentery, no structural derangement in the liver can be observed.

Those who have attributed it to suppressed perspiration, have come nearer to, but stopped far, very far short of, the mark. The suppres-

sion of this discharge is, in itself, a trifling, though in its connection with others, it becomes an important feature in the proximate cause of Dysentery.

As causes can only be traced by their effects, we must endeavour to find out, among the latter, such as are *always* present in Dysentery, and have a decided *priority* in occurrence. These, I conceive, constitute what is meant by proximate cause in this, as well as in every other disease. Are there any such, then, in Dysentery? I believe there are; and this belief does not rest on speculative grounds. I have not learnt the knowledge of this disease from the ancients nor the moderns, but studied it in the book of Nature; and every one of its symptoms has been deeply impressed on my memory, by painful personal experience, both within and without the tropics. I think, therefore, that my opinions, on this subject at least, are entitled to attention, if not respect; and that they ought to be distinguished from the delusive theories of exuberant and inexperienced imagination.

In every case of Dysentery that has ever come within the range of my observation, [and the number has not been inconsiderable] two functions were invariably disordered from the very onset, and soon drew other derangements in their train. These were, the functions of the skin and of the liver; or, perspiration and biliary secretion. I defy any one, who has minutely regarded this disease at the bedside, to produce a single instance in which these functions were carried on in a natural manner, at any period of the disease. The partial clammy

sweats which are sometimes seen on the surface, with the occasional admixture of bilious sordes in the stools, so far from being objections, are proofs of this position; for, excepting the above appearances, which are *unnatural*, the regular perspiration is suppressed, and the healthy secretion of bile entirely stopped. Dr. Balfour, who had some twenty years' experience in this complaint, and who treats of it under the name of "*putrid intestinal remitting fever*," states, at page 17 of his second Treatise on Sol-Lunar Influence, that—"At the *very beginning* of putrid intestinal fevers, and also about the time of their *final crisis*, or termination, I have often observed copious discharges of recent bile; but as the fever advanced, and remained at its height, such discharges have frequently *ceased to appear;* and I have been led to suspect, from these circumstances, that the passage of the bile into the duodenum, during this interval," [viz. from the very beginning to the crisis or termination] "was *altogether stopped.*" I beg the reader will keep this in mind.

These, then, are the two first links of that morbid chain which connects the remote cause with the ostensible form of the disease. Whoever can break these, by restoring those two functions to their natural state—I care not by what means or medicines—he will cure, or rather prevent, the disorder;—*et erit mihi magnus Apollo.* But we can seldom expect to be called in at this early period, for Dysentery is not yet manifested; although an accurate observer might, in his own frame, often detect these

nascent movements, and, by prompt measures, extinguish the disease in embrio.

Some other invisible, at least, very obscure links, are now to be noticed:—for however confidently a *proximate cause* may be decided on in colleges and closets, it is, in nature, a series of causes. The equilibrium of the circulation becomes disturbed. In consequence of the torpor in the extreme vessels on the surface, the volume of blood is directed to the interior, and the balance is still farther broken by the check which the portal current meets in the liver, from a corresponding torpor in the extreme or secreting vessels of that organ; the effect of which is, that the plethora in the cœliac and mesenteric circles is now greatly augmented, and febrile symptoms commence. The perspiration being stopped, a vicarious discharge of mucus and acrid serum is thrown from the extremities of the turgid mesenteric vessels upon the internal surface of the intestines, which by this time are in a state of irritability. The disease now begins to exhibit itself unequivocally, by the uneasiness in the bowels, the frequent desire to stool, and the mucous discharges. We may now plainly perceive how all those consequences, which have so often passed for causes, can arise. If the plethora be great, blood itself will be poured out from the mouths of the distended mesenteric and meseraic vessels; hence inflammation and ulceration may ensue. If any hardened feces lurk in the cells of the colon, they will be grasped by the irritable circular fibres of the intestines, and rings or strictures will augment the tormina and griping in the bowels.

In this situation, Nature evidently attempts to restore, by re-action, the balance of the circulation with the cuticular and hepatic functions, but she rarely succeeds; her abortive efforts too often aggravating, instead of relieving the symptoms. Thus we sometimes see a partial, ill-conditioned sweat on the surface, which is productive of no benefit; while from the liver, an occasional gush of vitiated bile, like so much boiling lead, throws the irritable intestines into painful contortions, and then the tormina and tenesmus are insufferable! Nature, to say the truth, is but a sorry physician in Dysentery. "In hoc enim corporis affectu," says Sir G. Baker, "aliquod certe in medicina "opus est, haud multum in *Naturæ* beneficio." Where she ultimately gains her end, it is where the local plethora is reduced by the discharge from the mesenteric and meseraic vessels, without occasioning much organic derangement in the bowels. This being effected, she more easily restores the equilibrium of the circulation, and the functions abovementioned. But, in a great majority of cases, where the disease is violent, her exertions either hasten the fatal catastrophe, or produce such lesion of structure and function in the chylopoetic viscera, as induces a tedious chronic state of the complaint, very difficult to manage.

The febrile symptoms will, at first, be in proportion to the *general* disturbance in the balance of the circulation; they will afterwards be kept up, or modified, by the extent of the organic derangement sustained. The discharge of blood by stool, on the other hand, appears to be pro-

portionate to the *local* plethora in the portal and mesenteric circles, and to the permanence and degree of torpor in the liver, occasioning that plethora.

This doctrine, thus briefly sketched out, if impartially considered, and fairly applied, will, I think, clearly account for every phenomenon of the disease, from the derangement of the liver, the largest of all glands, to that of the mesenteric glands themselves, which have, in their turn, been considered as the seat, or even the cause of dysentery.

But it is not sufficient that it merely accounts for the phenomena. If founded in nature and truth, it should, like an arithmetical rule, prove itself in various ways. Above all, the practical application of it ought to involve no contradictions; however various the routes may appear, they must all be shewn to tend ultimately to one point—the cure. It should explain how different means have attained the same end; and, finally, it should chalk out the best and nearest path we are to pursue. To this task I consider the doctrine in question perfectly equal; though I shall not apply it farther than to the leading phenomena of the disease, and the principal methods of cure.

Of the former I have spoken; I now come to the latter. The practitioner who has set down an inflammatory state of the intestines as the cause of Dysentery, comes to a patient, who is very ill with violent tormina and tenesmus; and passing blood, in alarming quantities, with his stools, which consist of nothing but that and mucus. He bleeds copiously, as his principal

indication, and prescribes laxatives or sudorifics as minor means, and in a trifling way as auxiliaries. He soon finds that the flow of blood by stool is much reduced—that the tormina are mitigated, and that something more than mere mucus comes away after the laxatives, with considerable relief to the patient. Nothing can be more plain than the way in which these means are beneficial, on the principle in question. Venesection lessens at once the plethora in the mesenteric vessels, and checks the effusion from their mouths. A general relaxation throughout the whole system follows—intestinal strictures are relaxed—scybala and fecal accumulations pass off; and Nature, thus relieved, attempts a restoration of equilibrium in the circulation, evinced by some degree of action in the extreme vessels on the surface, and, by sympathy, of the secreting vessels in the liver.

So far the physician has greatly assisted the spontaneous efforts of the constitution; and if the latter be equal to the task of keeping things in this prosperous train, all will be well—If not, the morbid state returns, and with it a fearful debility, which paralyses his arm, and embarrasses his mind! His patient may, or may not recover; but I should not like to be in his situation, under a man who confines his principal aim to the obviating of inflammation.

He who confides in purgatives, [and a great many do, who know little of the complaint] from an idea, that stricture and a retention of the natural feces are the essence of dysentery, treads on exceedingly tender ground. He certainly does assist Nature in her most ostensible,

but dangerous method of cure. If, by a course of purgatives, he can lessen the local plethora, and excite the healthy action of the liver [both which objects evacuating medicines, particularly of the mercurial kind, are without doubt calculated to effect] before any material injury takes place in the intestinal canal, he will succeed; because the general balance of the circulation will soon be restored, when the portal and mesenteric plethora is removed; and the sympathising function of the skin will participate in the healthy action of the liver. But, in a large proportion of cases, he will have the mortification to find, that such organic derangements occur, before he can attain his object, as will either hasten the fatal termination, or prove a fruitful source of misery in the chronic stage of the disease, which too often ensues.

The rationale of the emetic and sudorific plans, on the principle in view, is sufficiently obvious. They not only determine generally to the surface, but, by exciting the healthy action of the liver, they locally relieve the meseraic and mesenteric plethora, [a circumstance which their employers did not calculate on] and thus restore the balance of the circulation with the functions of perspiration and biliary secretion.

But however beautiful this plan may be in theory—however successful it may be in a few sporadic cases of Dysentery in private life, or in a well-regulated hospital, a more *utopian* practice for fleets or armies, in a tropical climate, was never engendered in the imagination, or seriously recommended for general adoption!

Dysentery.

Much do I suspect that those who praise or propose it, have never put it to the test of experience, except on a very confined scale, and with every convenience at hand. Only conceive the idea, of forty, fifty, or one hundred dysenteric patients, in a ship, wrapped up in blankets, beneath the burning skies of India, and spoon-fed with laudanum, antimonial wine, and warm balm tea, till perspiration gushed from every pore! In this state they are to be kept carefully guarded against the least breath of cool air—the use of buckets or close-stools prohibited—and every evacuation to take place in bed!!—Moseley, p. 250. But it is a waste of time to animadvert on an *impracticable practice*, to use a paradoxical expression, which has not a single proselyte, of even common abilities, between the tropics—in the eastern world, at least. "There would be this inconvenience," says the judicious Dr. Blane, "*in constantly encouraging a sweat*, that if the tenesmus should return, it [perspiration] would either be *checked* by the patient getting frequently out of bed, or there would be danger of his catching cold."—3d ed. p. 457.

The mercurial plan is of a very different stamp, in regard to its applicability. Indeed, the *empirical* exhibition of mercury, as it is called, in hepatic and dysenteric complaints abroad, has quite shocked the feelings of some physicians at home, who seem to fear that nurses and old women will usurp the places of their superiors, on account of the indiscriminate simplicity of its administration.* But the army or

* Saunders, Append. p. 44.

navy surgeon, who has a vast number of dysenteric patients coming every day under his care, smiles at these delicate scruples of high life. He knows, by repeated observation, that if he can bring on free ptyalism, the patient is secure for that time; and this begets a strong bias in favour, either of the *specific* power of mercury, or of the liver being the primary seat of the disease. With these prepossessions, he drives on for the object in view, regardless of particular symptoms, and disdaining to call in the aid of those means which I have been describing, and which are considered by others as the principal remedies. He is generally, however, successful; and if he knew to what extent he might go with safety in this empirical manner, he would be still more so, as shall be shewn in due time. But occasionally he is foiled, and cannot raise a ptyalism—then his resources are gone! The patient wastes away—inflammation, ulceration—even gangrene, may supervene; or, some morning, he sees, with astonishment, several inches of the rectum, that has passed off by stool in the night! This has happened under my own care, and *I know* that the same has occurred with several others.

Thus we see, that any one of the above methods, when set up as a principal to the exclusion of others, is attended with inconvenience, and [excepting perhaps the last] with repeated failures, if not general want of success, particularly in hot climates. A heterogeneous combination of them all, on the other hand, without order or discipline, and guided only by the discretion or caprice of the young practitioner,

would be little better, if not worse, than a blind adherence to one. Nothing, in short, but a controlling principle, that is ever to be held in view, under whose superintendance the above-mentioned agents are to be employed in their proper spheres, can lead to a settled and rational practice in Dysentery, or reconcile those jarring opinions and practices, with which both books and men continue to puzzle the minds of all whom personal and wide experience has not emancipated from the trammels of authority.

I have declared the *principle* that is to govern us, [the restoration of *healthy* perspiration and biliary secretion, with an equilibrium of the circulation] and enumerated, in a general way, the means which we are to use;—the direct application of the whole to practice, will be illustrated presently, by an appeal to facts.

I have yet said nothing of the *remote* cause of Dysentery. One of the latest writers on the diseases of India [Mr. Curtis] has cavilled at the term Dysentery being applied to the "fluxes" of that country, because, forsooth, they are not *contagious*. And does Mr. Curtis still labour under the error into which the venerable Cullen was led, by trusting to the observations of others? The opinion is scarcely worth alluding to; for no practitioner of the present day, who has seen the disease between the tropics on a large scale, and who can think for himself, and dares to avow his sentiments, entertains a doubt about its non-contagious nature. If, in Europe, it be occasionally combined with typhus, it is quite a different affair, and has nothing to do with our present subject.

But he says, the fluxes of India differ in their *symptoms* from the dysenteries of Europe. This is a more serious consideration, because it involves important inferences. Bnt how does Mr. Curtis support this assertion?—"The name of Dysentery," says he, "has been uniformly made use of to distinguish an affection, which, from the *accounts that are given of it*, appears to be nothing different from that which takes place in the bilious and hepatic fluxes of India." Where are those accounts? I have never seen them. The very last communication which has appeared on the subject, in the twenty-sixth number of the Edinburgh Medical and Surgical Journal, is directly in opposition to Mr. Curtis, since it distinctly states, that neither bilious nor hepatic symptoms were ever observed. The fact is this: Mr. Curtis's experience was limited to *hospital practice* on the Coromandel *coast*, where almost every case that he saw was connected with hepatitis; and where the discharges of depraved bile, in consequence of the derangement in the liver, and the heat of the climate, induced him to consider the fluxes of India as essentially different from the dysenteries of Europe. But had Mr. Curtis extended his researches to Bombay, Bengal, China, and other parts of the East, where atmospherical vicissitudes are much greater than at Madras, and where hot days are often succeeded by cold, raw nights, he would have seen the disease answering to every *iota* of Cullen's definition—saving the "*pyrexia contagiosa*," which, *pace tanti viri*, exists only in the imagination.

Dysentery.

I have purposely avoided, as much as possible, throughout this essay, to quote my own cases, in support of my own doctrines. Abundant proofs of all I advance shall be adduced from unsuspicious sources. The following little narrative, however, may well be allowed a place here; and it will shew that Dysentery may occur in India, unconnected with "bilious or hepatic flux."—

A very few weeks after my first arrival in that part of the world, I made one in a party of officers [not much wiser than myself] who landed a few miles below Kedgeree, for the purpose of shooting, and of seeing the country. The day was excessively hot—the ground was half inundated, and we waded and rambled about, through marshes, jungles, and paddy-fields—often with one-half of our bodies under water, and the other broiling in the sun, till we were fairly exhausted. As we had a sumpter-basket with us, we spent the whole day in this manner; and on returning, in the evening, to the banks of the river, at a place appointed, we found that the boat could not approach the shore, the water was so shoaly; we therefore dashed into the river, and waded off to where the boat lay at a grapnel. By this time it was sunset, and as we had a strong current against us, we sat in the boat nearly two hours, dripping wet, and shivering with cold, before we got on board. That night, my sleep was disturbed, and I felt slight rigors or chills, alternated with flushes of heat; but in the morning I got up as usual, and concluded that all was well. At dinner I had no appetite; and soon afterwards I felt uneasiness in my bowels. As the evening advanced, I had frequent calls to stool, with griping, and some tenesmus, nothing coming

away but mucus. Fever now came on—my skin became, hot, dry, and parched,—and by 11 o'clock at night, I could scarcely leave the close-stool. The misery of that night will never be erased from my memory! I was often delirious, especially when I lay down in bed; but indeed, so dreadful were the tormina and tenesmus—so incessant the calls to stool, that little respite could be procured. I had taken a dose of salts in the evening, but they afforded very trifling relief, except by bringing off some feculencies, attended with a momentary lull. Early in the morning, a medical gentleman, belonging to an East-Indiaman, visited me, and found me in a very bad way. I was now passing blood fast, and the fever ran high. I was bled, and took an ounce of castor oil immediately; a few hours after which, six grains of calomel, and one of opium, were taken, and repeated every five hours afterwards, with occasional emollient injections.

The day passed rather easier than the preceding night—the tormina were somewhat moderated by the medicine; but I had considerable fever—thirst—restlessness, and continual calls to stool; nothing, however, coming away, but mucus and blood. As night closed in, the exacerbation was great. The opium lulled me occasionally, but I was again delirious; and the phantoms that haunted my imagination were worse than all my corporeal sufferings, which were, in themselves, indescribably tormenting. The next day I was very weak; and so incessant were the griping and tenesmus, that I could hardly leave the close-stool. The tenesmus was what I could not bear with any degree of fortitude; and, to procure a

momentary relief from this painful sensation, I was forced to sit frequently on warm water. The calomel and opium bolus was now taken every four hours, with the addition of mercurial frictions. An occasional lavement was exhibited, and I each day took a dose of castor oil, which brought off a trifling feculence, with inconsiderable relief. My fever ran higher this day than yesterday, with hot, dry, constricted skin. As night approached, my debility, and apprehension of the usual exacerbation, brought on an extreme degree of mental agitation. The surgeon endeavoured to cheer me with the hope of ptyalism, which, he assured me, would alleviate my sufferings—I had then no local experience in the complaint myself. As the night advanced, all the symptoms became aggravated, and I was convinced that a fatal termination must ensue, unless a speedy relief could be procured. I had no other hope but in ptyalism; for my medical friend held out no other prospect. I sent for my assistant, and desired him to give me a scruple of calomel, which I instantly swallowed, and found that it produced no additional uneasiness—on the contrary, I fancied it rather lulled the tormina. But my sufferings were great—my debility was increasing rapidly, and I quite despaired of recovery! Indeed, I looked forward with impatience to a final release! At four o'clock in the morning, I repeated the dose of calomel, and at eight o'clock [or between 60 and 70 hours from the attack] I fell, for the first time, into a profound and refreshing sleep, which lasted till near midday, when I awoke. It was some minutes before I could bring myself to a perfect recollection of

my situation prior to this repose; but I feared it was still a dream, for I felt no pain whatever! My skin was covered with a warm moisture, and I lay for some considerable time, without moving a voluntary muscle, doubtful whether my feelings and senses did not deceive me. I now felt an uneasiness in my bowels, and a call to stool. Alas! thought I, my miseries are not yet over! I wrapped myself up, to prevent a chill, and was most agreeably surprised to find that, with little or no griping, I passed a copious, feculent, bilious stool, succeeded by such agreeable sensations—acquisition of strength, and elevation of spirits, that I ejaculated aloud the most sincere and heartfelt tribute of gratitude to Heaven for my deliverance!

On getting into bed, I perceived that my gums were much swollen, and that the saliva was flowing from my mouth. I took no more medicine, recovered rapidly, and enjoyed the best state of health for some time afterwards.

Mr. Curtis may denominate this disease, "Bilious fever and flux," or "Hepatic flux," but as it answers to every part of Dr. Cullen's definition, except the *erroneous* part, I must say, that it is a very fastidious multiplication of distinctions, without any real difference.

The "nature of the discharge" has led Mr. Curtis, and many others, astray. Often have I been told by gentlemen, that their patients were passing great quantities of bilious redundancies, when, upon examining the stools, four-fifths of these were composed of mucus, *tinged* of various hues, with vitiated bile and blood. It is astonishing how small a quantity of the former will com-

municate even a deep colour to any other fluid. Mr. Curtis' practice, too, consisted almost entirely in purgatives; consequently, what with this and the previously disordered state of the liver and its functions, we need not wonder that considerable quantities of depraved bilious secretions were brought off during the treatment. But these accidental varieties in the appearance of the discharge, arising from local causes, and greatly modified by the means employed for cure, do not authorise us to change the name of the disease. Such appearances have been observed in all countries, especially in autumnal seasons, and where purgatives formed a prominent feature in the *methodus medendi.* They have even led to the idea, that bile was the cause of Dysentery.

Of the *remote* causes I need say little. They are the same in all parts of the world—atmospherical vicissitudes. Perspiration and biliary secretion being in excess during the intense heat of the day, are so much the more easily checked by the damp chills of the night, and the consequences which ensue are clearly deducible from the principle I have stated. In short, the same general causes produce bilious fever, hepatitis, and dysentery. They are three branches from the same stem, the organs *principally* affected occasioning the variety of aspect.

Dysentery, *ceteris paribus,* will be the most frequent form: first, on account of the injury which the intestines are in the habit of previously sustaining, from the irregular or disordered function of the liver, whereby they become weakened and irritable; secondly, because they are destined, by Nature, to sustain the vicarious afflux of sup-

pressed perspiration. They are all cured on the same principle, and with some slight variety, arising from local circumstances, by the same remedies—a strong proof of the connexion which I have traced.

We now see how a few years' residence in hot climates predisposes heedless soldiers and sailors to Dysentery, as remarked in the 5th section on Yellow Fever, by the experienced author of that article, and as is well known to those who have practised between the tropics. The same principle explains the reason why we so frequently find Dysentery a concomitant on Hepatitis, especially that languid species of it, arising from obstruction and congestion, with previous derangement of function in the liver, rather than acute European inflammation. In the latter, as in enteritis, the bowels are, for the most part, costive. We next proceed to the cure, and various practical remarks connected with it.

If Mr. Curtis was astonished to "find mercurial frictions, *pushed the whole length of a salivating course,* recommended by one, and doses of calomel, to the extent of *ten grains every night*, by another, as a safe and effectual mode of cure for what they termed Dysentery," (Introduction to Diseases of India, p. xxi) he will have much more cause for wonder before the present section is closed; and will doubtless be ready to exclaim—"*Credat Judæus, non ego.*" But I shall take good care to put the matter beyond all doubt or cavil.

There are two safe and effectual modes of curing Dysentery. I shall point out the prin-

cipal remedy in each method first, and notice the subordinate auxiliary ones afterwards. One method is, to give mercury, in comparatively small doses, either alone, or combined with an anodyne, or with an anodyne and diaphoretic, [which is preferable] in such a manner, that from 24 to 36 or 48 grains of calomel, according to the urgency of the symptoms, may be exhibited, in divided portions, at three, four, or six-hour intervals, during the course of the day and night. In the same space of time, from two to four grains of opium, and from ten to fifteen grains of antimonial powder, may with advantage be administered, in combination with the calomel. One or two doses, at least, should be given, before a laxative is prescribed; and an ounce of castor oil is the best medicine I can recommend for the latter purpose. It will often bring away hardened fecal, or vitiated bilious accumulations, when the irritability of the intestines is previously allayed by the calomel and opium; and it will, in that manner, soothe the tormina and tenesmus. But although it may be repeated every day, it is never to interrupt the progress of the main remedy.

When blood appears alarmingly in the stools, whether the fever run high or not, venesection may be employed without the smallest apprehension of that bugbear—DEBILITY. Emollient oily glysters may also be occasionally thrown up, to lull the tenesmus. A flannel shirt is to be put on, and a bandage of the same round the abdomen, which is to be rubbed, once or twice a-day, with a liniment, composed of mercurial ointment and tincture of opium, well

incorporated. This will be found of greater service than the more ancient one of "*bat's blood*," or "puppies, frogs, and ducks," so celebrated by Dr. Moseley. By a steady perseverance in this simple plan, for a few days, the mouth will become sore, and every bad symptom vanish.

Thus, in little more than a page, is detailed a practice, which being founded on principle, is applicable to every stage and degree of Dysentery, and contains within itself resources against all possible emergencies. While we proceed directly forward to our final object—the restoration of the cuticular and hepatic secretions, with an equilibrium in the circulation, by a combination of mercury and diaphoretics, we lull pain, and relax strictures, at the same time, by the opium. To guard against inflammation of the intestines, we have the lancet on one side—and to carry off diseased, or irritating accumulations, we have laxatives on the other; the fever, being merely symptomatic, will, of course, cease with the cause. For the successful issue of this treatment, in general, I appeal to the rigid test of future experience with others, perfectly conscious, from my own, of its matchless efficacy.

This was the usual method I pursued, and with results far exceeding my most sanguine expectations. In some cases, of more than common violence, I was occasionally led into a practice somewhat different, which will be noticed presently.

It is a little singular, that no two medical gentlemen on the station, agreed exactly in the

mode of administering mercury—each was probably attached by habit to his own formula: but in one thing they were all unanimous—its astonishing power over the disease. This speaks for itself. I shall here exhibit a few specimens of the practice adopted by some of the most intelligent surgeons, and who had the longest and most extensive experience.

Mr. Rowlands, surgeon of H. M. S. Tremendous, [now surgeon of Halifax hospital] when called to a dysenteric patient, prescribed, first of all, a dose of magnes. vit. or natron. vit.; immediately after the operation of which, one grain of calomel was given every half-hour, without interruption, till ptyalism took place, which was generally on the third day. Scarce any other medicine was employed, except bladders of warm water to the abdomen, and the anodyne mercurial ointment, which I have already noticed.

Mr. Henry, surgeon of the Trident, a gentleman who passed a great number of years in India, and had ample experience, proceeded on the following plan: an emetic was first prescribed; and, after its operation, ten grains of calomel were given three times a-day, till ptyalism ensued; interposing occasional laxatives —generally castor-oil, or salts; and in the more advanced stages of the disease, combining small doses of opium with the calomel.

Mr. Shields of the Centurion, a very experienced and intelligent surgeon, commenced with a dose of castor oil in mint water, and after it had taken effect, prescribed an anodyne antimonial draught in the evening. Mercury was

then administered in the following formula:—calomel, ʒj; ipecacuanha, ʒſs; opium, grs. xii. These were made into twenty-four pills, two of which were taken three or four times a day, according to the urgency of the symptoms, till salivation came on, with an occasional laxative of castor oil.

Mr. Scott, surgeon of the Caroline, a judicious practitioner, and who, like myself, had been—"severely taught to feel" the violence of this disease, as well as of Hepatitis, pursued the following method: A saline cathartic [magnes. vit. ʒx] was first ordered, and, after its operation, an anodyne diaphoretic draught in the evening. From this time, mercury was given as follows: calomel, ʒj; opium, gr. iv; saponis q. s. ft. pill. xx. One of these to be taken every two hours, till ptyalism ensued, interposing a laxative when the griping was troublesome, and giving an anodyne draught every night.

It would be useless to multiply examples—the above are sufficient to give an idea of the general practice pursued in the East, and form so many living testimonies of its efficacy, of which not a shadow of doubt can be reasonably entertained.

I have now to notice a still bolder track which was followdd by a few surgeons in that quarter, without the least communication of sentiments on the subject—each conceiving his own plan to be perfectly unique.

I have mentioned that, in my own case, when despairing of recovery, I took, in one night, two scruple doses of calomel, without expe-

riencing any increase of the tormina, or urgency to stool; but on the contrary, with an apparent alleviation of those distressing symptoms. Although this circumstance did not make much impression on my mind at the time, as I considered it merely accidental; yet, when some of my patients afterwards appeared in similar situations, and I was in great anxiety about the event, I ventured to have recourse to the same measures, and never, in any one instance, with injurious effects, but very generally with an amelioration of symptoms, and an acceleration of the object in view—ptyalism. Emboldened by this, I afterwards tried calomel in scruple doses, two, three, or even four times a day, without any other medicine whatever; and found that it almost invariably eased the tormina, and lessened the propensity to stool; and, upon the whole, brought on ptyalism sooner than any other plan of smaller and more frequent doses. In one or two instances, however, it produced great nausea and sickness at stomach, with spasmodic affections of different parts of the body, which were soon removed by an opiate, combined with a diaphoretic, to determine to the surface. I did not, indeed, adopt this practice generally, being quite satisfied, in ordinary circumstances, with the plan which I before detailed. But whenever, in doubtful cases, I had occasion to push boldly on for ptyalism, I gave the calomel in scruple doses; which I found, by repeated experience, to sit easier than either a smaller or a larger quantity of that medicine—a curious, but a certain fact.

I was surprised, long after this, to find that a German assistant-surgeon, who had charge of my patients for some time, while I was at sick-quarters on shore, made it a very common practice to cure dysenteries in this way. But the following table will shew, that experience had pointed out the knowledge of this fact to others also.

Dysentery.

Tabular View of Thirty Cases of genuine idiopathic Dysentery, treated with Calomel, in Scruple Doses, on board H. M. S. Sceptre, in the East Indies, by Mr. JOHN CUNNINGHAM, *Surgeon of that Ship.* 1805.

Mens' Names.	No. of days under cure, before the purging stopped.	No. of days on the list afterwards, before fit for duty.	Total number of days on the list.	Scruples of calomel, taken in scruple doses, twice or thrice a day.	Remarks.
Henry	3	10	13	*Scr.* VI	Average number of days before the disease was checked, 4. Average convalescence afterwards, 7. Average no. of days on the list, *in toto*, 11. Average no. of scruples of calomel taken, 7 & half by each man. Of 231 cases of Dysentery, treated with calomel in different ways, 6 died. Of the last 60, treated in the annexed manner, none died.
Davis	4	3	7	X	
Kenan	4	3	7	V	
Jackson....	4	5	9	IV	
Humphries	6	14	20	VIII	
Cradock....	8	5	13	XII	
Paterson .	2	3	5	IV	
Vinton	6	7	13	IX	
Connor	3	10	13	V	
Richardson	4	9	13	V	
Mabley	9	3	12	XII	
Smith	4	6	10	V	
Dixon	4	3	7	VI	
Noble	6	12	18	XIII	
Smith (2) ..	3	11	14	VI	
Williams ..	4	6	10	IV	
Murray	3	6	9	V	
Stendon	2	7	9	IV	
Palmer	4	7	11	VII	
Lum	3	11	14	V	
Salter	8	5	13	XVIII	
Stoner.....	5	3	8	IX	
M'Cormick	4	6	10	V	
Stoneham ..	8	13	21	XV	
Kinch	2	5	7	IV	
Smith (3) ..	4	16	20	IX	
Bell.....	2	3	5	III	
Whitehurst	4	13	17	X	
Kenan (relapsed) ...	3	7	10	VI	
Wilmott	4	6	10	XII	

Dysentery.

If this document, confirming what I have related before, does not remove every doubt or prejudice from the minds of European practitioners, they must be proof against the impressions of truth. It is accompanied by the following remarks.—

"I am perfectly convinced," says Mr. Cunningham, "that this is the most successful method of speedily impregnating the system with mercury, because it does not excite the alvine discharge, so as to carry off the medicine by stool, as I have too often found smaller doses do.* As far as I could observe, larger doses than a scruple had the same effect as smaller, in aggravating the griping and purging. The whole amount, of my experience, then, in the treatment of more than 200 cases of genuine idiopathic Dysentery, is this:—that calomel, administered in scruple doses twice or thrice a-day, is an almost certain remedy for Dysentery —in hot climates, at least. There is no occasion to continue its use longer than till the symptoms fairly give way. But in obstinate cases, the system must be well impregnated, before a permanent cure can be expected. When the griping or fixed pain in the bowels ceases after the administration of a few scruples, and especially if the ptyalism be appearing, although the stools may continue frequent, it will

* Mr. Cunningham had a great prejudice against opium in this complaint, which accounts for the remark on small doses of calomel. A small proportion of the former medicine will completely obviate this effect, without any injury, especially if determined to the skin by diaphoretics.

be prudent to omit the medicine for a period or two, to ascertain the consequence; for it generally happens that, under such circumstances, the purging also subsides, as the ptyalism rises, and entirely disappears with the cessation of the mercurial action, which ought always to be allowed to abate gradually of itself, without purgatives or diaphoretics, otherwise a disagreeable return of the purging may be the result.

"I ought to notice, that although Dysentery prevailed in the Sceptre to a greater extent than in any ship of her class in India, during the time I belonged to her, yet not a single instance of hepatitis, supervening on the former disease, occurred. This was attributed by others, as well as by myself, to the liberal manner in which I prescribed mercury for the cure of Dysentery, which I am convinced has some intimate connexion with hepatitis. In the Albion and Russel, where much less calomel was used, liver complaints were very prevalent. The foregoing table exhibits the quantity of calomel taken, and the time required for the cure of the last thirty cases of Dysentery, without any selection, that came under my care." I may here add, that Mr. Cunningham, by way of experiment, took, when in perfect health, three scruple doses of calomel in one day; the only effect of which was an indescribably pleasant sensation along the tract of the alimentary canal, with one natural stool in the evening. Mr. Neil, of the Victor, was also in the habit of giving calomel in scruple doses, for the cure of Dysentery and bilious fever, with great success, and without ever ex-

periencing any inconvenience from the largeness of the quantity.

Let us now examine, by a retrospective glance, whether the science of medicine has retrograded or advanced, on this point, during the last thirty years. At that period, it appears by Mr. Curtis, that the theory of the day assigned —"a superabundance and vitiated condition of the bilious secretion," (p. 130) as the cause of *flux* (for Mr. Curtis carefully avoids the name of *Dysentery*, for the Cullenian reason I before noticed;) and *hence* "our plan of treatment," says he, "was deduced, and consisted chiefly, or *almost entirely*, in the choice and exhibition of evacuants."—p. 132. Very well; and what was the result? Why, "under this treatment, the greater number of our *milder cases* recovered in the course of three weeks or a fortnight."—p. 136. But what became of the rest? "In a *great proportion* of cases, the disease ran out to a great length beyond this, and commenced what might be called the *second stage*. The patient *continued* to be distressed with a *constant flux, with straining, griping, and sometimes bloody stools;* spasmodic pains in different parts of the abdomen, with heat, and dry skin, and some evening fever. There was some yellowness on the tongue, towards the root, with a sallow and sickly cast of countenance, and dull, yellowish colour in the white of the eye." Now, if this be not chronic dysentery, what, in the name of Heaven, is? The term can surely convey no meaning, but is merely—*vox, et preterea nihil!* But to proceed: "Under these circumstances,"

says Mr. Curtis, "it was necessary to continue the use of purgatives, at intervals, and to employ those of a more active sort. Whether it was, that few India fluxes, of any standing, are not connected with some disease or obstructed state of the liver or mesentery, or that some degree of this was *induced* in the course of the bilious fluxes, I could not positively determine. But we *constantly* found, when the disease continued any time in this state, *mercurial* purgatives answer much better than any other; or that mercury, combined with purgatives, and continued on the alterative plan,—such as a pill composed of rhubarb, calomel, and soap, grs. ℔ss each, given night and morning till it began to *affect the mouth*, effected cures when nothing else did any good."—p. 140, 141. This speaks for itself; but mark what follows.—"Mercurial frictions we seldom had recourse to, in these sort of cases; nor did we carry the use of mercury to such lengths as some *pretend* to have done for the cure of India fluxes, who seem to have proceeded without having any *determinate ideas* about the nature or operation of mercury in their cure."

I am disposed to think that the present essay will induce Mr. Curtis to recall the oblique—perhaps illiberal hint, conveyed under the word "pretend." With respect to the latter part of the paragraph, I beg to ask Mr. Curtis, by what "*determinate ideas*" he was led to conclude, that a medicine which cured the disease in an advanced stage, when all others failed, would not have been still more beneficial, if applied earlier, and in a more liberal manner? But

why need I talk about ideas? why should we wrangle about terms? Have I not piled fact upon fact, and testimony upon testimony, to prove, in the teeth of scepticism itself, the great superiority of the *decisive practice* before detailed, over the trifling, inert method pursued thirty years ago, whatever be the name or the nature of the disease? This is the grand consideration. The merits of different hypotheses must be decided, at last, at the tribunal of experience, (from whence, indeed, they ought to set out) and that which leads to the most successful practice will, in the end, have the greatest number of supporters. It is to this tribunal, and to this *alone,* I appeal. Whenever another theory points to better results, I shall bow in silence to its superiority—till then

> ——————Si quid novisti rectius istis,
> Candidus imperti, si non his utere mecum.*

If it be still urged, that there is something peculiar in the nature of India fluxes, which renders them tractable under mercury, and that the same treatment will not succeed in the West, I happen to have before me a document, which will go far to settle that point. In the years 1809 and 1810, fever and dysentery prevailed to

* While I differ with Mr. Curtis on some points, both practical and doctrinal, I beg leave to assure him, [and I am not much given to flatter] that his volume has prepossessed me greatly in his favour; since it contains a recital of facts, that entitles it to a place in the library of every medical man proceeding eastward.

a great extent, on board H. M. S. Sceptre, in the West Indies. Mr. Neill was surgeon of the ship; and adopting the Eastern practice, with which he was well acquainted, his success was equal to his hopes or wishes. I shall quote his own words, and he is now in England to vouch for their correctness.

"Dysentery is certainly a disease of the utmost importance in this climate, [West Indies] and may perhaps be connected with other complaints, which we might not have the most distant suspicion of.* Out of eighty well-marked cases, three have died. The first was an old man, who had two violent attacks previous to the last, or fatal one. The second was a very fine young man, who had scarcely ever been free from the complaint since we left England. The third died of the primary attack, which was accompanied with a much greater degree of fever than usual. In this *last* case, I deviated in some measure from my usual plan of cure, in consequence of calomel not standing high in the estimation of some medical gentlemen on this station. Confiding, therefore, more in the use of occasional purgatives and opiates, with diaphoretics, my patient died. From much experience in this disease, I may with confidence assert, that I scarcely remember to have lost a patient in primary attacks, or where the constitution was not cut down by climate and repeated attacks, when mercury [calomel] was given

* From conversations with him on this subject many years ago, in India, I know he alludes to the functions of the liver.

freely, so as to open the bowels, and bring on ptyalism."

I may be permitted to ask those who complain of its failure in the West Indies, whether they have ever given mercury a fair trial, in the mode recommended by myself, or those whose plans of treatment I have exhibited?.

From the West Indies, let us turn our eyes to Dysentery at the Cape of Good Hope, (which is extra-tropical) as described in the Edinburgh Medical and Surgical Journal for July, 1810. There we have a precious specimen of foreign practice in this disease! To say the truth, our continental brethren of the profession make but a sorry figure in the treatment of tropical complaints. I have seen a few of them; and must confess, that the best of them—(even the self-sufficient Frenchman, with all his boasted superiority of "*tact*") are the veriest drivellers imaginable, when opposed to a formidable endemic in a hot climate; and are really fit for little else than boiling a ptysan, or exhibiting a lavement. This censure is amply confirmed by Dr. Lichtenstein's report of the practice pursued at the Cape, where their grand effort—the *ne plus ultra* of Batavo-hottentot skill, viz. "the attempt to combine all the methods in one formula, by including *crabs'-eyes, alum, rhubarb, ipecacuanha, and opium, was also unsuccessful.*"—p. 300. "But if," says the author, "it were a misfortune for the patients, it was nevertheless an advantage, to maintain the reputation of medical science."—A comfortable reflection truly!

After a sufficient number of legal murders in this way, to support the honour of the profession,

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it appears, that the numerous instances of jaundice in the living, and suppurated livers in the dead, did at length induce a suspicion that all was not right in the biliary organ, and, in short, "that the disease was connected with derangement of the circulation in the system of the vena portæ." —p. 301. This, of course, led to the idea of giving mercury; but it was not till after many consultations were held, and that some of the more learned of the "*Ecole de Sante,*" had traced the administration of mercury to Dr. LIND, of all others,* that they ventured—"to introduce the use of mercurials, which, from their well-known relaxing and *dissolving properties,* [Dr. Mills, to wit:] would seem, *a priori,* likely to augment the flux of blood."—ib. They now hit upon as miserable a mode of exhibiting this medicine, as the most inveterate anti-mercurialist could desire.—"From the moment of their arrival (generally the second day of the disease), *a quarter, or one-third of a grain of calomel,* was administered every hour, with the same quantity of opium," &c. As for venesection, or intestinal evacuations, they were out of the question; for Brunonianism was the *lex suprema* with them in 1804-5!! "At the onset, and during the increase of the fever," says the Report, "the excitement was *insensibly* modi-

* "After bleeding with great caution," [in Dysentery] says Dr. Lind, and giving a few grains of ipecacuanha, by way of vomit, with an opiate after its operation, let a full dose of sal. cath. amar. be administered, in order to cleanse the intestines; and afterwards, let recourse be had to ipecacuanha in the smallest doses, with opiates and rhubarb."—On Hot Climates, p. 275. I see no mention made of mercury.

fied and regulated, (by what means?) and the doses of calomel were *increased* in proportion, being sometimes given to the extent of seven or eight grains a-day." Passing by the *insensible* regulation of the excitement, which I suppose was by the—"tact," for I see no other means employed, unless it was by "infusion of valerian, with opium, æther, mucilages," &c. I should be glad to know by what rule of arithmetic Dr. Lichtenstein calculated the "*increased doses*" of calomel; since the quarter-grain per hour doses gave six, and the one-third grain per hour gave *eight grains* in the day; and yet we find that, *after* this, they ventured to the amazing extent of "*seven or eight grains a-day.*" Such inconsistencies in a *French bulletin* might be pardoned, because they would be expected; but they do not look well in a medical report.

However, bad as the practice was, it certainly rescued "the reputation of medical science" from a fate that seemed almost inevitable, in spite of all the "crabs'-eyes and alum" which the new school could supply, or even "the domestic remedies of the apothecary of the Hottentots," which it seems some of the apostate colonists preferred to the orthodox treatment. "At first," says Dr. L. the calomel was administered with timidity, (first and last, God knows!) from the fear of exciting salivation; but further experience occasioned greater boldness, when it was ascertained that the *crises* were as effectually accomplished by salivation, or by a mucous discharge from the bronchiæ, as by the stools, which last (at the crises) were copious, of a pultaceous consistence, black, and of a cadaverous odour."—p. 302.

This fine piece of reasoning about crises, and critical discharges, amounts simply to this:—that when the mouth became affected, the perspiration, biliary secretion, and equilibrium of the circulation, were restored, and the patient recovered.

Dr L. remarks, that mercury was less advantageous, when exhibited at a more advanced period of the disease; a circumstance not very wonderful in itself, and which, I believe, may be observed of any other remedy for any other complaint. "However," continues he, "*every individual recovered,* to whom the calomel had been given on the first or second day of the disease."—ib. This is a tolerably substantial proof of the efficacy of mercury, however injudiciously it was administered!

The sequelæ of the disease were just what might be expected, from the timid manner in which the chief remedy was applied, and the injurious effects of so much opium and astringents, given when blood should have been flowing, "pleno rivo," from the arm. These were,—"suppuration of the liver—induration of that organ, and chronic diarrhœa." The whole of the document, however, is well worthy of perusal; and it confirms all the chief positions which I have advanced respecting the remote and proximate cause, as well as the cure of Dysentery.

In a very notable performance, on Walcheren Fever, by Dr. Wright, an army physician, p. 303, we have the following observations:—

"Dysentery is *enteritis* of the rectum, and sometimes of the colon." * * * "The only indication I was able to form from these premises, was, that as the disease was *within the reach* of topical treatment, hence all the *topics* employed suc-

cessfully in other inflammations, applied equally here.

"I therefore ordered, in the first instance, an injection of *cerussa acetata*, which, with starch and opium, produced great relief; [is opium generally used as a *topic* in other inflammations?] But finding unpleasant observations afloat, I abstained—*my patient died:* possibly his fate might have been inevitable, (quite inevitable, I think, under this treatment) but I regret having so abstained."—304. "Another patient, treated with calomel, recovered, which I attributed to *bile* having been the exciting cause, which was decomposed by the muriate of mercury."—ib.

There is one passage, and only one, in the work, which can explain the above, and most other doctrines contained therein. It is addressed "to the reader," and informs us—"that through the whole summer of 1810, his head was so *engaged*, in consequence of the infection he contracted on duty, that he was incapable of resuming his task until winter." This unravels the whole mystery, and pity disarms the pen of criticism. Poor gentleman! the winter has only developed the true nature of his disease!

Thus, between the tropics, in the Eastern and Western world, and beyond the tropics, at the "stormy Cape," the mercurial treatment has triumphed (and will ever triumph, in my humble opinion,) over every other that has yet been put to the test of experience. I have only to add, that since my return to Europe, I have never met with a case of Dysentery, where I had the treatment, from the beginning, in my own hands, that did not give way to mercury and its

auxiliaries before alluded to, and often with more facility than between the tropics. In many cases of chronic dysentery, too, which I have met with among French prisoners, the practice, with some slight modification, principally in the *quantity* of the chief remedy, has succeeded beyond my expectation, where the degree of emaciation, and the extent of local derangement, had rendered the prospect of a cure almost hopeless.

The latest observation which I find on this mode of treatment, is by Mr. Haslam. "In those very violent diarrhœas," says he, "which ordinarily terminate in *Dysentery,* from five to ten grains of the pillula hydrargyri have been given, according to the sex, constitution, and nature of the complaint, once or twice a-day, and with general success."—On Insanity, p. 323.

Hitherto I have only presented the favourable side of the picture to view; it now becomes a duty to exhibit its sad reverse! In doing this, however, I have the consolation of hoping that, sooner or later, it may induce those in whose hands alone the remedy is placed, to apply it efficaciously. I may add, that the *rationale* which I have attempted of the disease, is equally elucidatory of the failure as of the success, in the *methodus medendi* recommended.

Those, then, who have had most experience in hot climates, best know the melancholy fact, that in every repetition of Dysentery, and after every successive year of our residence between the tropics, we find the remedy has greater and greater difficulty in conquering the disease. In

process of time, as the intervals between attacks become curtailed, we find it a very tedious process to bring the mouth affected with mercury; and, what is still worse, the check thus given to the complaint is only temporary; for soon after the influence of the medicine wears off, our patient returns upon our hands as bad as ever. At length, the system absolutely refuses all impregnation from mercury; and we have the mortification to see our patient waste away, and die, for want of the only remedy that possibly could arrest the hand of death—CHANGE OF CLIMATE!

And how can it be otherwise, upon the principle which I have stated? The perspiratory and biliary vessels become gradually weakened, by their inordinate and irregular action, from the stimulus of atmospherical heat: they are consequently more and more easily struck torpid by the least atmospherical vicissitudes, and require the additional stimulus—or rather, the change of stimulus from medicine, to excite their healthy action. Hence, the longer we ring those changes, the nearer we approach that state when the vessels, at last, cease to obey all stimuli—the functions alluded to cannot be restored, and the unhappy victim dies! Add to this, that the intestines themselves become more irritable by every subsequent attack, and, even without any attack, by the impaired state of the functions in question, which annually increases.

This view of the subject leads me to deplore the great waste of human life occasioned, in ships of war, by protracted stations in the East and West Indies! The notion that *time* seasons us against all other diseases, as well as yellow

fever, cannot now be urged, for its fallacy is detected. From the great endemic scourge we might, in general, protect our seamen, by proper care; but over the disposition to Dysentery, in that class of Europeans, we have little control, since time itself is our adversary—*omnia metit tempus!*

If, as Dr. Bancroft supposes, the *remote* cause of Dysentery, as well as of yellow fever, must be sought in *marsh miasmata,* how comes it to pass, that the same period of time which secures us from their operation in the one case, [fever] should render us peculiarly liable to it in the other? This is surely blowing hot and cold with the same breath! The truth is, that marsh miasmata very frequently augment the effects of atmospherical vicissitudes (as at Bombay, for instance) but if it were firmly established, that paludal effluvia were the *sole remote causes* of Dysentery, (which, however, I deny) it would not in the slightest degree affect the *proximate cause* which I have stated, nor the *principle* which I have held up as our guide. These last do not rest on hypothesis; they are deduced from a careful observation of facts, and I am inclined to think they will stand the test of scrutiny.

I shall now advert to some more minute particulars in the treatment of this complaint, which, from the documents I have produced, and my own testimony, will, I trust, no longer be viewed in the terrific habiliments wherewith it is clothed by Dr. Moseley. "The pen of writers," says he, "has done little more in Dysentery, than record the times and places, when

and where it proved most fatal—its devastations, and the variety of modes of treatment, which had no certain success."—Tropical Diseases.

The use of opium in Dysentery has been loudly applauded, and as unconditionally condemned. Yet here, as in many other instances, it is the *abuse* only which has brought odium on a valuable medicine. Opium will do harm, if given alone; particularly in primary attacks, and in young or plethoric habits. If alternated with purgatives, it will do little good—perhaps even harm. But if combined with calomel and antimonial powder, it will be found (and I do not speak from theory) a most important auxiliary to those medicines, both by preventing any intestinal irritation from the one, and by increasing the diaphoretic effect of the other. All its injurious consequences (if any such result in this way) may be easily obviated by the lancet and laxatives, when symptoms require them.

The nitrous acid I have often found a useful adjuvant, particularly in secondary attacks, where the relaxed and weakened state of the bowels seemed to keep up the disease. A couple of drachms per diem, in barley or cungee water, will diffuse an agreeable sensation of warmth through the alimentary canal, and increase the tone of the intestines.

An infusion of quassia, or other light bitter, should be immediately commenced on leaving off the mercury, and continued till the stomach and bowels have recovered their vigour. This should never be omitted.

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It is hardly necessary to remark, after the principles which I have laid down, that flannel next the skin is indispensible, and that the most scrupulous attention in avoiding dews, damp night air, or sudden atmospherical vicissitudes, is necessary during convalescence, to prevent a relapse.

In no disease is patience, on the part of the sick, a greater virtue, or more calculated to forward the good effects of medicine, than in Dysentery. If obedience be paid to every call of nature, the straining which ensues is highly detrimental, and I am convinced, augments, in many cases, the discharge of blood—every motion of the body, indeed, increases the desire to evacuate. As little or nothing, except mucus and blood, comes away in four efforts out of five, we should endeavour to stifle the inclination to stool; and (as I know by personal experience) we shall often succeed; for the tormina go off in a few minutes, and by those means we elude not only the straining, but the painful tenesmus, which continues so long after every fruitless attempt at evacuation. This circumstance, though apparently of a trifling nature, is of considerable importance; and yet it has seldom been attended to, either by authors or practitioners. As it has the sanction of antiquity, I shall here adduce it, as a proof that Dr. Moseley (like some others) has been more anxious to shew the extent of his reading, than the solidity of his judgment, in his "interesting" selections from the ancients. He has passed over in silence, then, this useful precept in

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Celsus—" Et cum *in omni fluore ventris*, tum in hoc precipue necessarium est, non quoties libet desidere, sed quoties necesse est; ut *hæc ipsa mora* in consuetudinem ferendi oneris intestina deducat."—lib. iv. xvi. And what has Dr. Moseley extracted from the same author, in lieu of this judicious observation, which has stood the test of ages? Why, that—" an effectual remedy against cancer (i. e. ulceration) of the intestines, is a lump of *minium* bruised, with half a pound of salt."—" Valensque est etiam adversus cancerem intestinorum, minii gleba cum salis hemina contrita!"

In the *chronic dysenteries*, which so perplex us after returning from tropical climates, all those precautions and directions detailed under the head of *Chronic Hepatitis*, (with which the complaint in question is generally associated) will be found well worthy of attention—particularly flannels and occasional opiates.

The diet in Dysentery must of coure be of the most unirritating and farinacious nature; such as sago, arrow-root, rice, &c. &c. A very excellent dish for chronic dysenterics, is flour and milk, well boiled together, which, with a very little sugar and spice, is highly relished by the debilitated patient.

But there is one remark applicable to this, and every other febrile complaint, whatever may be the organ most affected; namely, that, when convalescence takes place, the appetite too often outstrips the digestion, and so do chylification and sanguification exceed the various excretions, so as to occasion a dangerous ine-

quilibrium between assimilation and secretion; the consequence of which is, that the weakest viscus, or that which has suffered most during the previous illness, becomes overpowered, and relapse ensues! This is the great error of inexperience, and it is generally seen too late!—I appeal to clinical observation for the truth and the importance of these remarks.

CHOLERA MORBUS,

ET

MORT DE CHIEN.

SEC. 8.—IN no disease has a *symptom* passed for a *cause*, with more currency and less doubt, than in Cholera. From Hippocrates to Celsus, and from Celsus to Saunders, *bile* has been condemned, without a hearing, as the original perpetrator of all the mischief. "Bilis sursum ac deorsum effusiones," says the first; "Bilis supra, infraque erumpit," says the second; and, "Cholera Morbus," says the last of these authors, "may very properly be considered under the head of those diseases which *depend* on the *increased secretion* of bile."—On the Liver, p. 179. How will the orthodox reader (who takes his medical creed ready "cut and dry" from such unquestionable authorities) stare, when I venture to affirm, that Cholera does *not* "depend" on an increase, but on a diminution, and, in many cases, a total suppression of the biliary secretion. I hear him exultingly exclaim, that "now this bold innovator has surely gone beyond his depth, and committed himself on a point, where ocular demonstration itself must con-

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found him!" Let him enjoy his triumph; it may not be of long duration.

A very excellent description of the disease in question, as it appears in this country, will be found under its proper head, in Rees' new Cyclopedia, written, I believe, by Dr. Bateman, and taken principally from Sydenham. I shall extract the following passage for my text:— "The attack of this complaint is generally sudden. The bowels are seized with griping pains, and the stools, which are at first *thin and watery*, as in common diarrhœa, are passed frequently. The stomach is seized with sickness, discharges its contents, and rejects what is swallowed. In the *course of a few hours*, the matter vomited, as well as that which is discharged by stool, appears to be *pure bile*, and passes off both ways, in considerable quantities. The griping pains of the intestines now become more severe, in consequence of the extraordinary irritation of the passing bile, which excites them to partial and irregular spasmodic contractions. These spasms are often communicated to the abdominal muscles, and to the muscles of the lower extremities. The stomach is also affected with considerable pain, and a sense of great heat, in consequence of the same irritation. There is usually great thirst, and sometimes a severe head-ache, from the sympathy of the head with the stomach. The pulse becomes *small and frequent*, and the heat of the skin is increased. A great degree of debility, languor, and faintness, amounting even to syncope, speedily comes on; sometimes attended with colliquative sweats, coldness of the extremities, 'and such like

symptoms,' says Sydenham, 'as frighten the bye-standers, and kill the patient in twenty-four hours.' "

Now it does appear somewhat curious to me, that if an increased secretion of bile were the *cause* of the disease, we should see nothing of it till—"a few hours" after the *effects* become obvious! Where is this increased secretion all the time? Not in the stomach, for it "discharges its contents, and rejects what is swallowed" long before. It is not in the intestines, for the stools are at first "thin and watery." At length, however, "*pure bile*" makes its appearance; and lo! it is accused of being the *cause* of all! Finally this same "pure bile" 'frightens the bye-standers, and kills the patient in twenty-four hours.'—Monstrous supposition!

At what season does this commonly take place?—In August and September. Well; certainly that is the time for great heat and increased action in the hepatic system. But are there no particular attendant circumstances? Yes, says the author of the foregoing passage, "It has been remarked, that both in hot climates, and in the hot seasons of mild climates, *occasional falls of rain* have been particularly *followed* by an epidemic cholera."—ib. Indeed! a fall of rain is wonderfully well adapted to *increase* the secretion of bile! But again: "In some places it is probable, that the heat of the season may give only *a pre-disposition*, and that certain *ingesta*, *sudden change of temperature*, or other causes, in this state readily excite the disease."—ib. All these are admirably adapted, no doubt, to produce a great flow of bile! But

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let us return to Dr. Saunders, who has already informed us, that Cholera "depends on the increased secretion of bile." He says, "it frequently takes place spontaneously, and independently of any *sensible* occasional cause (what! not of previous heat?). At other times, it is *evidently* connected with a sudden *change of temperature* in the atmosphere during those months (August and September) or brought on by drinking *cold* liquors, or by any thing else that *suddenly chills the body,* especially when *overheated* by exercise or labour."—p. 181. Now, in what manner we are to connect these "evident" causes with an "increased secretion of bile," Dr. Saunders leaves us to find out as we can, for he has not even attempted an explanation; and in most other parts of his valuable work, he is by no means backward in giving us the *rationale* of things, where he can do it with eclat. But, in truth, to set about proving that *cold* increased the hepatic action, would have been a sad tergiversation, after what he previously advanced respecting the operation of *heat* on the biliary system; and therefore he very prudently leaves to others the task of elucidation.

Dr. Paisley, whose letter on this subject was the oracle of India, in its day, and is inserted at full length in Mr. Curtis's volume, undertakes the explanation. "This dangerous disease," says he, "is, as you have observed, a true Cholera morbus, the same they had at Trincomallee." And again—"This disorder originates in the liver. The secretions are disordered. The bile becomes altered in quality and consistence,

and the digestion is impaired, until the foundation of some illness is laid. An accumulation of gelatinous stuff in the *flexures of the duodenum and colon* takes place, which locks up *putrid bile*, until some additional cause sets it in motion. *Bleak winds, dews*, and insalutary exhalations from *cold*, unventilated, and *damp* situations, give a *sndden check to perspiration*, which proves a *ferment to attenuate* and set in motion this latent mischief." Well done, Dr. Paisley! Now, although this is a "most lame and impotent conclusion," being founded on the exploded notions of the humoral pathology, yet the *remote, or exciting causes*, are distinctly stated, as well they might; for it is hardly possible to overlook them in that part of the world. But, conscious how badly these remote causes would harmonize with "increased secretion of bile," Dr. Paisley, like a cautious general, has been far beforehand with us; and, in short, keeps his *proximate cause* "locked up" for the occasion, "in the flexures of the duodenum and colon," and defended from such intruders as must *pretty frequently* pass that way, by a tough coat of "gelatinous stuff," which, however, instantly opens to the vivifying principle of "suppressed perspiration." How the most anti-putrescent fluid in the human body should acquire this poisonous putridity, during a state of health, in which hundreds are half an hour before they are seized with Cholera, Dr. Paisley does not explain, and obviously for the best of all possible reasons. But granting, for a moment, that all this was the case, still he leaves totally unaccounted

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for, the "increased secretion" of bile which very generally takes place *in the course* of the disease, and on which Dr. Saunders and others consider Cholera to "depend."

Having shewn, I think satisfactorily, the inadequacy of these doctrines to an elucidation of the phenomena, I shall at once pass the Rubicon, and proceed to prove, that an "increased secretion of bile," so far from being the *cause* of Cholera Morbus, is, upon the whole, *a favourable symptom;* and that, in the very worst forms of the disease, it is *entirely absent.*

In no part of the globe does this terrific disorder assume a more concentrated state than on the coasts of Ceylon, especially its eastern side. The mountains tower to a great height, in fantastic shapes, or conical peaks, clothed from base to summit with almost impenetrable forests of lofty trees, underwood, and jungle. Deep vallies and ravines, still more thickly covered with similar materials, and choaked up, as it were, with all the wild exuberance of tropical vegetation, separate the mountains from each other, and swarm with myriads of animals and reptiles. From these vallies, in the months of May, June, and July, when the S. W. monsoon is in force, the gusts of land-wind come down, hot and sultry by day, but chilling cold and damp by night. Where mountainous and woody, or flat, marshy, and jungly tracts, border on the sea, atmospherical vicissitudes will, *ceteris paribus*, be greater, than where the coast is flat and gravelly, or dry and cultivated. The reason is obvious. Thus, the vicinity of Madras, for in-

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stance, being a sandy or gravelly soil, which, during the intense heat of the day, acquires a temperature, perhaps 60 or 70 degrees above that of the contiguous ocean, a considerable share of the night elapses before the heat of the earth sinks to an equilibrium with that of the water; and consequently, we seldom have the land-wind cold there, except after falls of rain; and on the contrary, in May and June, it is hot throughout the night. At Ceylon, on the other hand, the surface of the ground being so defended from the sun's rays by woods and jungles, it never acquires any thing like the temperature of the opposite Coromandel coast; and although during the months alluded to, when the south-west monsoon passes with great strength over Ceylon, the wind by day be hot and sultry, yet, as soon as the dews have fallen in the evening, and evaporation commences from a very extended surface, the land-breeze is instantly rendered cold and raw; and being then loaded with vapour, together with all kinds of terrestrial and vegetable exhalations, communicates to our feelings and frames a chill, far exceeding what the thermometer would actually indicate. The same remark applies to Bombay: but in Bengal there are no regular sea and land breezes; consequently the changes of temperature are not so abrupt and extensive as in the fore-mentioned places.

Numerous cases, exhibiting the dire effects of these atmospherical vicissitudes, aggravated, no doubt, by the land-wind effluvia, now lie before me—effects, indeed, that might well "frighten

the bye-standers," or even Sydenham himself; for the patient is often cut off in a much shorter space of time than "twenty-four hours!"

A seaman on board of a ship, lying in Back-Bay, Trincomallee, in the month of June, went to bed rather intoxicated. About midnight, however, he turned out, in a state of perspiration, and got upon deck, as is very usual, where he lay down in the cold land-wind, and fell fast asleep. During the preceding day, the land-wind had been hot and sultry, the thermometer ranging from 86 to 88 degrees. In the night, the mercury fell to 74°, with raw, damp gusts from the shore. About four o'clock in the morning, he awoke with a shiver, and left the deck; but was soon seized with frequent purging and griping, his stools consisting of mucus and slime. Nausea and retching succeeded; nothing being ejected but phlegm, and the contents of the stomach. His pulse was now small, quick, and contracted—his skin dry, but not hot. About eight o'clock in the morning, he began to feel spasms in different parts of his body, which soon attacked the abdominal muscles, and threw him into great pain. During these paroxysms, a cold, clammy sweat, would be occasionally forced out, especially on the face and breast. The extremities now became cold, his features shrunk—the stomach rejecting every thing that was offered, either as medicine or drink. The abdomen and epigastrium, all this time, were distended and tense, with incessant watery purging and painful tenesmus. By ten o'clock, his pulse could scarcely be felt—his breathing was oppressed and laborious—his

eyes sunk, and the whole countenance singularly expressive of internal agony and distress! The extremities were cold, shrivelled, and covered with clammy sweats. The violence of the spasms now began to relax; and by eleven o'clock, or seven hours from the attack, death released him from his sufferings! The warm bath, opium, æther, and various medicines had been tried, without affording any relief.

This may serve as a specimen of the worst form of that dreadful disease, which has obtained the appellation of "*Mort de Chien,*" or the "Death of a Dog." No bilious accumulations are to be seen, either in the stools, or what is ejected by vomiting, from the beginning to the end of the disease. Neither is there ever the slightest appearance of '*natural and healthy perspiration.*' A watery fluid is occasionally forced out by the spasms and pain, while the skin is shrivelled and tense, and the subcutaneous, or perspiratory vessels, perfectly torpid.

From such an awful state of concentration, the disease assumes all degrees of violence, down to a common Cholera. In exact proportion as bile appears, and the nearer it approaches to a natural quality, so much less is the danger.

A seaman, from like imprudent exposure to the cold land-winds, after great fatigue during the heat of the preceding day, was attacked with symptoms nearly similar to the former. After the spasms came on, however, he had cold and hot fits alternately, with corresponding sweats, and bile appeared occasionally, both by

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vomit and stool. He had swallowed a scruple of calomel, and in this case, blood was taken from the arm, which instantly alleviated the spasms. In an hour after the calomel was taken, a purgative enema brought off several copious alvine evacuations, followed by large quantities of bile, some of which was highly fetid and depraved. He now felt greatly relieved—fell into a fine perspiration and sleep, and by the next day was perfectly well.

I could here adduce numerous cases, both favourable and fatal, little differing, in essential symptoms, from the two related above. But as the point which I have pledged myself to prove, must be decided by unequivocal and disinterested evidence, I shall bring forward the testimony of Mr. Curtis, a most faithful and candid reciter of facts, as every page in his volume evinces.

It is necessary to recollect, that the disease which Mr. Curtis describes, and the place where it happened, [Trincomallee] are those alluded to in Dr. Paisley's letter, where the latter affirms, and I think with justice, that *Mort de Chien* is nothing more than the highest degree of Cholera Morbus.

"Early in the morning of the 21st June," says Mr. Curtis, "we had two men seized with the *Mort de Chien*, both of whom we lost in a few hours; and in the course of the two following days, three more in the same complaint, without meeting with one fortunate case. To the 25th, when we sailed for Negapatam, we had three new cases of the same kind, all of whom were saved, but two of them with great

difficulty. Besides these, we had several others, which were of a nature considerably different; *being evidently combined with bilious colluvies in the first passages,* a circumstance *not at all discoverable* in the five cases that ended fatally. All these [viz. where bile appeared] were found to be much more tractable—easily removed, and attended with little danger."—p. 48. "In all of them [the eight cases alluded to] the disease began with a *watery purging*, attended with some tenesmus, but little or no griping. This *always* came on some time in the night, or early towards morning, and continued some time before any spasms were felt." * * * * * * "This purging soon brought on great weakness, coldness of the extremities, and a remarkable paleness, sinking, and lividness of the whole countenance. Some at this period had nausea, and retching to vomit, but brought up *nothing bilious.* In a short time, the spasms began to affect the muscles of the thighs, abdomen, and thorax; and lastly, they passed to those of the arms, hands, and fingers."—p. 49. "The patients complained much of the pain of these cramps.——As the disease proceeded, the countenance became more pale, wan, and dejected. The eyes became sunk——The pulse became more feeble, and sometimes sank so much, as not to be felt at the wrist."—p. 50. "The tongue was generally white, and more or less furred towards the root, with thirst, and desire for cold drink." . . . . "The coldness of the extremities, which was perceptible from the first, continued to increase, and spread over the whole body, but with *no moisture on the skin*, till the severity of the pain and spasms *forced*

out a clammy sweat, which soon became profuse."—p. 51. "All this time, the purging continued frequent, and exhibited nothing but a *thin watery matter, or mucus.* In many, the stomach became at last so irritable, that nothing could be got to rest upon it; every thing that was drank was spouted up immediately. The countenance and extremities became livid—the pulsations of the heart more quick and feeble—the breathing laborious. In fine, the whole powers of life fell under such a great and speedy collapse, as to be soon beyond the reach of recovery. In this progression, the patient remained from three to five or six hours, from the accession of the spasms, seldom longer."—p. 52. "In the Seahorse, it attacked some remarkably robust, powerful, and muscular men, who had been in *perfect health immediately before.* Neither, in all our class of *bad and fatal cases,* did there appear any marks of *bilious* colluvies, either in the colour of the *ejected matter*—the state of the abdomen, or the appearance of the tongue, eyes, and urine."—p. 56. . . . . "We had, indeed, another set of cases, where the presence of this [bile] was distinguishable by *all these characters,* but *these* were of a far *slighter* nature, and *none* of them turned out any way untractable or fatal. And again, at Madras, Mr. Curtis observes—"Out of about twenty under my care, a *third* were evidently connected with *bilious* colluvies; and in *these* there was no great sinking of the pulse, or diminution of the heat, and the spasms were confined to the legs and feet.—p. 69". These all recovered. Lastly, in two cases of dissection which took place im-

mediately after death in this disease, Mr. Curtis affirms that—"there were *no bilious accumulations* found any where, and the internal organs were all in a sound state; only there was more water than natural in the pericardium, and the vessels of the lungs, liver, and mesentery, appeared to be very *turgid, and full of blood.*"—p. 72.

I appeal to every unbiassed mind—nay, to prejudice itself, whether I have not now proved (I had almost said to a demonstration) the truth of that heterodox position with which I set out —namely, that "an *increased secretion of bile,*" so far from being the *cause* of Cholera Morbus, is, upon the whole, a *favourable symptom;* and that in the very worst cases of the disease, (Mort de Chien, for instance) it is *entirely absent.*"

This point being settled, the application of that principle, to which I have so often adverted —*the connexion or sympathy between the functions of the skin and liver,* will afford a more rational explanation of the phenomena, than either "an increased secretion," or a lurking, putrid accumulation of that far-famed mischief-maker—BILE.

The sudden and powerful check to perspiration—the unparalleled atony of the extreme vessels, debilitated by previous excess of action, and now struck utterly torpid, by the cold, raw, damp, nocturnal land-winds, loaded with vegeto-aqueous vapour, and abounding with terrestrial and jungly exhalations—break at once, and with violence, the balance of the circulation. The extreme vessels of the hepatic system,

sympathising with those on the surface, completely arrest the reflux of blood from the portal, cœliac, and mesenteric circles; hence, in the worst cases, a *total* suppression of biliary secretion, with distension of the abdomen, and shrinking of all external parts. If this continue any time, as in *Mort de Chien*, death must be the inevitable consequence, notwithstanding the unavailing efforts which Nature makes, by vomiting, to determine to the surface—restore the equilibrium of the blood, and, with it, the functions of perspiration and biliary secretion. In proportion, then, as the two latter appear, will the danger be lessened—our most salutary objects attained, and the disease become "less untractable and fatal."

The deluges of bile which occasionally burst forth on the *re-commencement* of secretion in Cholera, are the natural *consequences* of the great plethora in the portal and other abdominal circles of vessels, which took place during the previous check to biliary secretion, and free passage of blood through the liver. And thus we see, that the very *last* link in the chain of *effects*, and that too, a *salutary* one, has, for ages, been set down as the *cause* of Cholera—"increased secretion of bile."!!

With respect to the spasms, as they are totally unaccounted for by my predecessors, neither am I bound to dive into the mysteries of the nervous system, for a solution of the phenomenon. I think I have pretty clearly proved, that they are not attributable to bile; since, in the most dangerous and fatal cases, no bile is to be found. I can easily conceive that the brain must suffer,

from the broken balance of circulation, as well as from its known sympathies with the stomach and liver, and thus, in some measure, account for the unequal distribution of nervous energy, which may excite cramps, and throw various classes of muscles into convulsive agitations. I am the more disposed to this opinion, from the circumstance, that in three desperate cases of *Mort de Chien*, the spasms were instantaneously relieved by venesection. In one of them, which happened on board the Centurion, *trismus* (an unusual symptom) had taken place—the eyes were fixed, and the pupils dilated. Bleeding was attended with immediate good effects, and the patient was well next day.

Having mentioned trismus, I may here remark, that *Mort de Chien* must not be confounded with that or tetanus. For, although the latter have arisen from checked perspiration in many instances, they are totally different from the disease under consideration. The gastric irritability, and dysenteric purging, might be a sufficient diagnosis; but the spasms themselves are dissimilar. In *Mort de Chien*, the affection is not confined to a particular class of muscles; it passes from one to another, and those of the neck, face, and back, are almost always exempted. Neither is it a *rigidity*, but a fixed *cramp* in the belly of the muscle, which, as Mr. Curtis justly observes, "is gathered up into a hard knot with excruciating pain." Lastly, the vascular system is infinitely more affected in *Mort de Chien* than in tetanus, and the fatal termination, beyond all comparison, more rapid.

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Nor is this investigation of the *proximate cause* of Cholera, a subject of mere curiosity; it is highly useful; inasmuch as it strongly confirms and elucidates the principle which I have kept in view through various diseases in this essay; and, what is of more consequence, it points directly to the most indispensible part of the cure, in the awful and terrific forms which the disease assumes in these parts of the world —namely, *the early restoration of balance in the circulation*; an indication but little dreamt of in the old *bilious theory*, where every eye was kept fixed on the lurking demon—BILE!

"In strong habits," says Dr. Paisley, "when the pulse keeps up, evacuations should be promoted both ways, by a vomit of two or three grains of *emetic tartar*."—Curtis, p. 86. But soon after, he observes, "In relaxed habits, where the pulse sinks suddenly, and brings on immediate danger, the *same method must he pursued*, but with greater caution. The emetics and purges must be gentle, and made cordial with wine, and sp. lavend. Laudanum must be at hand, *to gain time*; and though it is a *dangerous* expedient to *suspend evacuations where putrid bile lurks*, yet, of two evils, the least is to be chosen; for the patient must sink to death, if a respite from evacuations, pain, and spasm, is not procured." Nothing so true as this last. Nature is here, as it were, stunned with the blow; and the struggling efforts which she makes to relieve herself, by vomiting, &c. only exhaust her the sooner, if not effectually assisted by art. We must therefore have recourse to more powerful means than wine, laudanum, or

lavender. The warm bath—cordials of the most stimulating kind, such as warm punch, or toddy, must be added to opium and calomel, together with friction, hot flannels, &c. &c. In short, every means must be tried to determine to the surface, restore the equilibrium of the circulation, and with it natural perspiration (not the clammy fluid forced out by pain and spasm, but a mild, warm sweat) and biliary secretion. Calomel must never be omitted, because it answers a triple purpose:—it allays the inordinate gastric irritability—it excites the action of the liver—and it corrects the constipating effects of the opium; so that, when the orgasm is over, some gently laxative medicine may, with it, carry off the diseased secretions, which must sooner or later take place, if re-action can be brought on, or recovery effected. When all medicines by the mouth have been ineffectual, in allaying the orgasm of the stomach and bowels, laudanum, by way of injection, has succeeded, and should be had recourse to, though it is generally neglected. I have not mentioned venesection, though, from its instantaneous good effects in three desperate cases, I am inclined to think it might prove a powerful auxiliary in relieving the brain, and other internal organs, when overwhelmed with blood, anterior to re-action; and also by moderating the violence of the re-action itself. This idea is strengthened by the success which has lately attended copious depletion in two cases of *hydrophobia*, in India, where the spasms bore no trifling resemblance to those of *Mort de Chien*.

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"I had heard much," says Mr. Curtis, "of latent and lurking bile, as the general source of India diseases, and resolved to seek for and hunt it out, by the means employed by others—viz. repeated small doses of sal. glaub. in aq. menthæ piper. sharpened with a very small proportion of emetic tartar. This plan was accordingly tried with our next patient. He threw up a *very small quantity* of greenish coloured bile, and the solution operated much downwards, without any relief or discharge of bilious matter."—p. 59. After the warm bath, opium, and mulled wine, had been tried without success, Mr. Curtis continues.—"A warm, purgative glyster was given him, but was followed by *no bilious discharge.* No vomiting continued after the first exhibition of the purgative, but a repetition of it, to see if *any bile lurked still in the stomach,* and could be solicited downwards, brought on continued retching, and he threw up every thing after this till his death."—ib. Mr. Curtis now gave up the pursuit of "lurking bile," and saved his next two patients by the warm bath—frictions with hot arrac—wrapping them up in blankets, and supplying them with warm tea and arrac, till perspiration broke out, when they were relieved, and soon recovered.

It is only necessary to remark, in conclusion, that in the milder cases of *Mort de Chien,* corresponding to common *Cholera Morbus,* when the bilious vomiting and purging appear, Nature has then repelled the original cause of the disease, and is fast advancing with the cure. We have only now to moderate and regulate her hurried, and, as it were, frightened movements, by opium and calomel, in pretty large doses; the former, as I have

before hinted, by glyster; and when all is quiet, to carry downwards, by mild laxatives, the *effects* of the disorder, and its cure—DISEASED SECRETIONS OF BILE.

I could extend the Influence and Effects of Tropical Climates on European Constitutions, by including the disposition to ulcers, and many minor consequences of a residence in hot countries; but the remainder of the volume must be dedicated to a most important branch of this essay—the *prevention* of disease.

If I have traced a remarkable identity of *proximate cause* in tropical diseases, it is no more than the similarity and simplicity of their treatment may warrant; and as it has been deduced from observation, so am I sanguine in the hope, that it will be confirmed by future experience.

PART III.

PROPHYLAXIS;

OR,

TROPICAL HYGIENE.

Prestat argento, superatque fulvum
Sanitas aurum, superatque censum
Quamvis ingentem, validæque vires
Omnia prestant.

As prevention is better than cure, it might seem more natural to have detailed the means of preserving health, before entering on the treatment of diseases themselves. This plan has accordingly been adopted by Dr. Moseley; but I think it an injudicious one. In describing *effects,* I have traced pretty minutely their *causes;* and in that way must have obviated a vast tautology in this part of the work. Besides, by exhibiting both causes and effects in one view, I am convinced that the salutary impression is always stronger.

For example; could the gravest anathema, denounced with all dûe solemnity, against sleeping ashore on insalubrious coasts, excite half so much interest in the mind of a European, as the fatal catastrophe at Edam Island?—But another great point is gained by this plan. The various reasonings and remarks which accompanied the description and treatment of diseases, will enable even the general reader to comprehend, with infinitely more ease, the *rationale* of those prophylactic measures, which I am now to delineate; and which, at every step, will recall to his memory the deplorable effects resulting from a contempt of them. This is no inconsiderable object; for we all know the gratification which springs from understanding what we read. And, in truth, it is a pleasure—nay, it is a positive advantage, to be able to explain, even on a *false theory,* the principles of a *useful practice.* But as theory, in this instance at least, is the legitimate offspring of experience, so, I trust, the superstructure is as firm as the foundation.

It has been remarked, by a very competent judge, "that by taking the general outline of indigenous customs for our guide, if we err, it will be on the safe side." This is a good rule; but, unfortunately, it is impracticable—by those, at least, who stand most in need of one. For, before we can become acquainted with these indigenous customs, it will be too late for many of us to adopt them; and could we see them at one *coup d'oeil,* when we first enter a tropical climate, how are we to avail ourselves of them, unless they happen to be in unison with the habits of our countrymen already resident there, who would not

fail to sneer at the adoption of any plan which had not the sanction of their superior experience. But independently of this, it would be strange if the progress which has been made in the knowledge of the animal economy, as well as in other sciences, did not enable us to correct many "indigenous customs," which, in reality, have ignorance, superstition, or even vice for their foundation. This applies particularly to the eastern world, where the natives are neither in a state of nature, nor yet refinement; but where we see a strange medley of ludicrous and ridiculous customs—of Hindoo and Mahommedan manners, from which the European philosopher may glean much useful local knowledge, while he exercises his reason and discrimination, in separating the grain from the chaff.

Another advice has been given us; namely, to observe and imitate the conduct of our own countrymen long resident in the climate. This is certainly the most practicable; but, in my opinion, it is not the safest plan. And for this plain reason, that *residence* alone confers on them immunities and privileges, of which it would be death for us, in many instances, to claim a participation, before the period of our probation has expired. I think I shall be able to shew, hereafter, that the unseasoned European may apply, with safety, certain preventive checks to the influence of climate, which would be inconvenient, if not hazardous, to those on whom the said influence had long operated. The stranger, then, must go with the general stream of society, especially at the beginning; but there is no situation, even here, where he may not obviate, in a great measure, the

first and most dangerous effects of the new climate, by a strict observance of two fundamental rules —TEMPERANCE and COOLNESS. The latter, indeed, includes the former; and, simple as it may appear, it is, in reality, the grand principle of Inter-tropical Hygiene, which must ever be kept in view, and regulate all our measures for the preservation of health.

Common sense, independently of all observation or reasoning on the subject, might, *a priori*, come to this conclusion. From *heat* spring all those effects which originally *predispose* to the reception or operation of other morbific causes. And how can we obviate these effects of *heat*, but by calling in the aid of its antagonist, *cold?* * To the *sudden* application of the *latter*, after the *former* has effected its baneful influence on the human frame, I have traced most of those diseases attributable to climate; nothing, therefore, can be more reasonable, than that our great object is to moderate, by all possible means, the *heat*, and habituate ourselves from the beginning to the impressions of cold. The result will be, that we shall thereby bid defiance to the alternations or *vicissitudes* of both these powerful agents. This is, in truth, the grand secret of counteracting the influence of tropical climates on European constitutions; and its practical application to the common purposes of life, as well as to particular exigencies, it shall now be my task to render easy and intelligible. For the sake of perspicuity, I

* I overlook the useless litigation respecting cold being the absence of heat.

shall here, as hitherto, class my observations under separate heads; though, from the nature of the subject, I shall consider myself much less shackled, or tied down to forms, than in the two preceding parts of the essay; and consequently, shall not be over nice in confining myself to a dry, didactic rehearsal of medical rules and precautions. The scope and purport of any digression, however, shall always point to my principal design—the preservation of health.

DRESS.

Sec. 1.—I shall not stop here, to inquire whether this be an unnecessary luxury of our own invention, or originally designed for us by our Creator. The force of habit is, no doubt, great; and the Canadian who, in reply to the European's inquiry, respecting his ability to bear cold applied to his naked body, observed, that "he was *all face,*" gave no bad elucidation of the affair. Passing over the great African peninsula, where man enjoys that happy state of nudity and nature, mental as well as corporeal, on which our learned philosophers have lavished such *merited* encomiums, we come to the ancient and civilized race of Hindoos; and here, too, we shall be constrained to admire the almost omnipotent power of custom, as exemplified in the persons of some of the first objects that arrest our attention.

The habiliment of the Bengal *dandy*, or waterman, who rows or drags our *budjrow* up the Ganges, consists in a small, narrow piece of cloth [doty] passed between the thighs, and fastened before and behind to a piece of stout packthread, that encircles the waist. In this dress, or undress, corresponding pretty nearly to the *fig-*

Dress.

leaf of our great progenitor, he exposes his skin to the action of a tropical sun—a deluge of rain, or a piercing *north-wester*, with equal indifference! After "tugging at the oar," for hours together, in the scorching noontide heat, till perspiration issues from every pore, he darts overboard, when necessary, with the track-rope on his shoulder, and wades through puddles and marshes—this moment up to the middle, or the shoulders in water—the next, in the open air, with a rapid evaporation from the whole surface of his body! All this, too, on a scanty meal of rice, being seldom paid more than—*threepence per day, board wages!*

Here is one of those indigenous customs, which we shall not find it very safe to imitate; though many of our keen European sportsmen have undergone for pleasure, or in search of a snipe, what the poor *dandy* is forced to perform for a livelihood. It is hardly necessary to remark, that such pursuits are at the risk of life, and are highly destructive of health.

But, independent of habit, Nature has previously done a great deal towards the security of the *dandy*, by forming the *colour*, and in some respects the *texture*, of his skin, in such a manner, that the extreme vessels on the surface are neither so violently stimulated by the heat, nor so easily struck torpid by sudden transitions to cold. Certain it is, that the action of the perspiratory vessels, too, is different from that of the same vessels in Europeans—at least, they secrete a very different kind of fluid; being

more of an oily and tenacious nature than the sweat of the latter. This, in conjunction with the oil so assiduously and regularly rubbed over the surface, every day, by all ranks and casts of both sexes, must greatly tend to preserve a softness and pliability of the skin, and a moderate, equable flow of perspiration.*

But if we look beyond the hardy and labouring casts of natives, we observe both Hindoo and Mahomedan guarding most cautiously against solar heat, as well as cold. The *turban* and *cummerbund* meet our eye at every step:—the former, to defend the head from the direct rays of a powerful sun; the latter, apparently, for the purpose of preserving the important viscera of the abdomen from the deleterious impressions of cold. This [cummerbund] is certainly a most valuable part of their dress; and one that is highly deserving of imitation.

Such are the *essential* articles of Native dress; the light, flowing robes of cotton, silk, calico, &c. varying according to the taste or circumstances of the wearer, and being more for ornament than use. A very good substitute for the

* It is curious, that the upper classes of native ladies, especially Mahomedan, as if determined that nothing of European complexion should appertain to them, are in the habit of staining red, with the *mindy* or hinna plant, the palms of their hands and soles of their feet, the only parts of the external surface where the *rete mucosum*, or seat of colour among them, cannot maintain its deep tint, on account of the friction.

turban is a large cotton handkerchief, folded up in the hat; and, where we are exposed to the direct influence of solar heat, it may, with much advantage, be kept moistened with water. In situations where atmospherical vicissitudes are sudden, a fine shawl round the waist forms an excellent *cummerbund*, and should never be neglected, especially by those who have been some time in the country, or whose bowels are in any degree tender.

When we enter the tropics, we must bid adieu to the luxury of linen—if what is both uncomfortable and unsafe, in those climates, can be styled a luxury. There are many substantial reasons for so doing. Cotton, from its slowness as a conductor of heat, is admirably adapted for the tropics. It must be recollected, that the temperature of the atmosphere, *sub dio*, in the hot seasons, exceeds that of the blood by many degrees; and even in the shade, it too often equals, or rises above, the heat of the body's *surface*, which is always, during health, some degrees below 97°. Here, then, we have a covering which is *cooler* than linen; inasmuch as it conducts more slowly the *excess* of external heat *to* our bodies. But this is not the only advantage, though a great one. When a *vicissitude* takes place, and the atmospherical temperature sinks suddenly far below that of the body, the cotton, still faithful to its trust, abstracts more slowly the heat *from* our bodies, and thus preserves a more steady equilibrium there. To all these must be added the facility with which it absorbs the perspiration; while linen would feel

quite wet, and during exposure to a breeze, under such circumstances, would often occasion a shiver, and be followed by dangerous consequences.

That woollen and cotton should be *warmer* than linen in low temperatures, will be readily granted; but that they should be *cooler* in high temperatures, will probably be much doubted. If the following easy experiment be tried, the result will decide the point in question. Let two beds be placed in the same room, at Madras, we will say, when the thermometer stands at 90°; and let one be covered with a pair of blankets, the other with a pair of linen sheets, during the day. On removing both coverings in the evening, the bed, on which was placed the blankets, will be found *cool* and pleasant; the other uncomfortably warm. The reason is obvious. The linen readily transmitted the heat of the atmosphere to all parts of the subjacent bed; the woollen, on the contrary, as a non-conductor, prevented the bed from acquiring the atmospherical range of temperature, simply by obstructing the transmission of heat from without. This experiment not only proves the position, but furnishes us with a grateful and salutary luxury, free of trouble or expence. The musical ladies of India are not unacquainted with this secret, since they take care to keep their pianos well covered with *blankets*, in the *hot season*, to defend them from the heat, and prevent their warping.

From this view of the subject, *flannel* might be supposed superior to *cotton;* and indeed, at cer-

tain seasons, in particular places—for instance, Ceylon, Bombay, and Canton, where the mercury often takes a wide range, in a very short space of time, the *former* is a safer covering than the latter, and is adopted by many experienced and seasoned Europeans. But, in geral, flannel is inconvenient, for three reasons.—First, it is too heavy; an insuperable objection. Secondly, where the temperature of the atmosphere ranges pretty steadily a little below that of the skin, the flannel is much too slow a conductor of heat *from* the body. Thirdly, the spiculæ of flannel prove too irritating, and *increase* the action of the perspiratory vessels on the surface, where our great object is to *moderate* that process. From the second and third objections, indeed, even cotton or calico is not quite free, unless of a fine fabric, when its good qualities far counterbalance any inconvenience in the above respects.

In some of the upper provinces of Bengal, where the summer is intensely hot, and the winter sharp, the dress of native shepherds, who are exposed to all weathers, consists in a blanket, gathered in at one end, which goes over the head, the rest hanging down on all sides like a cloak. This answers the triple purpose of a *chattah* in the summer, to *keep out* the heat—of a tent in the rainy season, to throw off the wet—and of a coat in the winter, to defend the body from the piercing cold. Hence our ridicule of the Portuguese and Spaniards, in various parts of the world, for wearing their long black cloaks in summer, "*to keep them cool,*" is

founded on prejudice rather than considerate observation.

The necessity which tyrant custom—perhaps policy, has imposed on us, of continuing to appear in European dress—particularly *uniform*, on almost all public occasions, and in all formal parties, under a burning sky, is not one of the least miseries of a tropical life! It is true, that this ceremony is often waved, in the more social circles that gather round the supper-table, where the light, cool, and elegant vesture of the East, supersedes the cumbrous garb of northern climates. It is certainly laughable, or rather pitiable enough, to behold, for some time after each fresh importation from Europe, a number of *griffinish* sticklers for decorum, whom no persuasions can induce to cast their *exuviæ*, even in the most affable company, pinioned, as it were, in their stiff habiliments, while the streams of perspiration that issue from every pore, and ooze through various angles of their dress, might almost induce us to fear that they were on the point of realizing Hamlet's wish; and that, in good earnest, their

> "Solid flesh would melt—
> Thaw, and resolve itself into a dew!"

It too often happens, however, that a spice of ceremony attaches to the kind host—or perhaps hostess, in which case, as no encouragement will be given to derobe, the poor griffin must fret and fume, with prickly heat and perspiration, till the *regalement* is con-

cluded. By this time he is doubtless in an excellent condition for encountering the raw, chilling vapours of the night, on his way home!

It were "a consummation devoutly to be wished,"—though, I fear, little to be expected, that the European badges of distinction, in exterior decoration, could be dispensed with, at all festivals, public and private—formal, social, or domestic, within the torrid zone. It requires but the most superficial glance to perceive, that coolness during our repasts is salutary, as well as comfortable; and that, from the extensive sympathies existing between the skin and several important organs, particularly the stomach and liver, that the converse of the position is equally true; especially as, in the *latter* case, we are led a little too much to the use of "gently stimulating liquids, to support the discharge;" the bad consequences of which are pointed out at page 16 of this essay, and will be again considered in the section on Drink.

There is an injurious practice, into which almost every European is led, on first visiting a tropical climate, but particularly the Eastern world, which has never been noticed, I believe, by medical writers, though well entitled to consideration. In the country last mentioned, body-linen, or rather cotton, is remarkably cheap, and washing is performed on such moderate terms, that one hundred shirts may be even *bleached* for about ten shillings sterling, on an average. A large stock of these useful articles is, then, the first object of northern stran-

gers, which "*Blacky*," indeed, knows full well, and takes especial care to turn to his own advantage. But this is a trifling consideration. The European, contemplating, with great satisfaction, the multitude of changes he has thus cheaply amassed, and calculating the very reasonable terms of ablution, determines to enjoy, in its fullest extent, a luxury which he deems both salutary and grateful, independently of all considerations respecting appearance. It is therefore very common to see him shift his linen three or four times a-day, during the period of his noviciate, when perspiration is, indeed, superabundant. But, let me assure him, that he is pursuing an injudicious—nay, an injurious system; that the fluid alluded to, already in excess, is thus powerfully solicited; and the action of the perspiratory vessels, with all their associations, morbidly increased, instead of being restrained. But what is to be done? The newly-arrived European justly observes, that he finds himself drenched with sweat, three or four times a-day, in which state he cannot remain with either safety or comfort. Certainly, it would be useless to point out the evil, without suggesting the remedy; and happily it may be obviated, to a considerable extent, in a very simple and easy manner. In those climates, when linen becomes wet in a few hours with perspiration, it by no means follows that it is soiled thereby, in any material degree. It should not, therefore, be consigned to the wash, but carefully dried, and *worn again*, once, or even twice; and that, too, with-

out the smallest infringement on the laws of personal cleanliness, but with the most salutary effect on the health. It is astonishing how much less exhausting is the linen, which has been once or twice impregnated with the fluid of perspiration, than that which is fresh from the mangle. By this plan, no more than one shirt is rendered unfit for use every day; and in cool weather, or at sea, not more, perhaps, than four shirts a week. Necessity, the mother of invention, first taught me this piece of knowledge, in consequence of having lost my stock once, by sailing suddenly from Trincomallee; but I know that, however trivial the circumstance may *appear*, an attention to what I have related will, in reality, prove more beneficial than precautions of seemingly greater magnitude. Its rationale is in direct unison with the grand and fundamental object in tropical prophylactics—TO MODERATE, WITHOUT CHECKING THE CUTICULAR DISCHARGE.

The property which *frequent* change of linen has, in exciting cuticular secretion, and the effects resulting from the sympathy of the skin with the stomach, liver, and lungs, may account, in a great measure, for the superior health which accompanies cleanliness, in our own climate; and, on the contrary, for the diseases of the indigent and slovenly, which are almost invariably connected with, or dependent on, irregularity or suppression of the cuticular discharge. Intelligent females well know the *peculiar effect* of clean linen on themselves, at particular periods.

Tropical Hygiene.

To the above observations on dress, I may add, that no European should, where he can avoid it, expose himself to the sun between the hours of ten and four in the day. If forced, during that period, to be out of doors, the *chattah* should never be neglected, if he wish to guard against *coup de soleil*, or some other dangerous consequence of imprudent exposure.

Food.

FOOD.

ALTHOUGH I entirely agree with Celsus, that—"*sanis omnia sana;*" and with a late eminent physician, that an attention to *quantity* is of infinitely more consequence than *quality*, in our repasts; and although I also believe, that an over-fastidious regard to *either* will render us unfit for society, and not more healthy after all; yet, when we change our native and temperate skies of Europe for the torrid zone, many of us may find, when it is too late, that we can hardly attend too strictly to the quantity and quality of our food, during the period of assimilation, at least, to the new climate; and that a due regulation of this important non-natural will turn out a powerful engine in the preservation of health.

It is now pretty generally known, from dire experience, indeed, that instead of a disposition to *debility and putrescency*, an inflammatory diathesis, or tendency to plethora, characterises the European and his diseases, for a year or two, at least, after his arrival between the tropics; and hence provident Nature endeavours to guard against the evil, by diminish-

ing our relish for food. But alas! how prone are we

> "———————— to spur beyond
> Its wiser will, the jaded appetite."

Not only "by dishes tortured from their native taste," but by the more dangerous stimulants of wine or other liquors, as well as condiments and spices, which should be reserved for that general relaxation and debility which unavoidably supervene during a *protracted residence* in sultry climates. Here is an instance where we cannot *safely* imitate the seasoned European. Indeed, there are no points of Hygiene, to which the attention of a new-comer should be more particularly directed, than to the *quantity and simplicity* of his viands; especially as they are practical points entirely within his own superintendance, and a due regulation of which, is not at all calculated to draw on him the observation of others—a very great advantage.

Every valetudinarian, particularly the hectic, knows full well the *febrile paroxysm* which follows a full meal: the same takes place in every individual, more or less, whatever may be the state of health at the time. How cautious, then, should we be, of exacerbating these natural paroxysms, when placed in situations where various *other* febrific causes are constantly impending over, or even assailing us! The febrile stricture which obtains on the surface of our bodies, and in the secerning vessels of the liver, during the *gastric digestion* of our food, as

evinced by a diminution of the cutaneous and hepatic secretions, (vide section 2.) will, of course, be proportioned to the duration and difficulty of that process in the stomach, and to the quantity of ingesta; and as a corresponding *increase* of the two secretions succeeds, when the chyme passes into the intestines, we see clearly the propriety of moderating them by abstemiousness, since they are already in *excess*, from the heat of the climate alone; and this *excess* is one of the first links, in the chain of causes and effects, that leads ultimately to various derangements of function and structure in important organs, as exemplified in hepatitis, dysentery, and in many parts of this essay.

That vegetable food, generally speaking, is better adapted to a tropical climate than animal, I think we may admit; and particularly among unseasoned Europeans:—not that it is quicker or easier of digestion, (it certainly is slower in this respect) but it excites less commotion in the system during that process, and is not so apt to induce plethora afterwards. It is very questionable whether the ancient Hindoo legislators had not an eye rather to policy than health, when they introduced the prohibition of animal food as a divine mandate. They probably thought, and in my opinion with good reason, that the injunction would tend to diffuse a more humane disposition among the people, by strongly reprobating the effusion of blood, or depriving any being of existence; and these prejudices were admirably sustained by the doctrine of transmigration.—

Hence drew th' enlightened sage the moral plan,
That man should ever be the friend of man—
Should view with tenderness all living forms,
His brother-emmets, and his sister-worms!

But, whatever might have been the medical objections of BRAHMA to carnivorous banquets, certain it is, that a race of what now may come under the denomination of "*natives*," (the Mahomedans) amounting to, perhaps, a seventh or eighth of the whole population, make no scruple of indulging freely in most kinds of animal food;—who, in the face of the shuddering Hindoo, will sacrilegiously slay and eat that great Indian deity, the *cow;* and who, in their turn, look with perfect abhorrence on the polluted Englishman, who regales himself—not, indeed, on four-footed deity, but, in the Mussulman's opinion, with worse than cannibalism, on devil incarnate—PORK!

————Mox et *preputia* ponunt,
Nec distare putant *humana carne suillam*,
Quâ pater abstinuit.————JUV.

Yet Hindoo, Mahomedan, and European—at least, the two first, while *moderation* is observed in their respective meals, enjoy equal health, and attain equal longevity.

So Heaven has formed us to the general taste
Of all its gifts, so custom has improved
This bent of nature, that few simple foods,
Of all that earth, or air, or ocean yield,
But by *excess* offend.————

Food.

Yet, if we critically examine the different casts, or rather classes of society, in India, we shall find that their physical powers and appearances are considerably modified by their manner of living. Nothing strikes the stranger with greater astonishment, than the personal contrast between the rich and the poor! Almost the whole of the upper classes are absolutely FALSTAFFS; and often have I been puzzled to know how some of them could stow themselves away in a palankeen, and still more so, how their bearers could trot along under the pressure of such human porpoises! The truth is, that the Hindostannee fops, (and most of the superior orders are such) pride themselves, above all things, on rotundity of corporation, and particularly on the *magnitude of their heads!*

To acquire such elegant distinctions, one would be tempted to suspect, that they occasionally broke the vegetable *regime*, and indulged in better fare than BRAHMA thought proper to prescribe. But no; all is accomplished by *ghee* and indolence! Of the former, which is a kind of semi-liquid butter, made by evaporating the aqueous part from the rich milk of the buffalo, they swill immense quantities; and whatever we may hear, from *fireside* travellers, of Hindoo temperance and abstemiousness, these gentry contrive to become as *bilious,* occasionally, as their European neighbours, and manage to curtail the natural period of their existence full as efficaciously, as their brother "*gourmands*" on this side of the water

—making their exits, too, by the same short routes of apoplexy, and other fashionable near-cuts to heaven.

The lower, or industrious classes, on the other hand, who live almost exclusively on vegetables, certainly bear a striking resemblance to "Pharaoh's lean-fleshed kine." But although they have not the physical strength of a European, they make up for this, in what may be termed, "*bottom*;" for it is well known, that a native will go through three times as much fatigue, under a burning sky, as would kill an Englishman outright—witness the palankeen-bearers, coolies, dandies, hircarrahs', &c. &c. Nor is temperance always a prominent feature in the character of these gentry; for, what with bang, toddy, arrac, opium, and other inebriating materials, which all countries produce in some shape or other, and which all nations have shewn their ingenuity in manufacturing, they not seldom "muddle their brains," with as much glee as the same description of people in our own latitudes. Those, on the other hand, who, from local situation, poverty, or principle, adhere to the dictates of their religion and cast with great pertinacity, and seldom admit animal food within the circle of their repasts, (milk excepted) are certainly exempted from numerous ills that await our and their countrymen, who transgress the rules of temperance. Yet, when they are overtaken by disease, they have not *stamina*, and debility characterises the symptoms. Upon the whole, I am disposed to think that, taking the average longevity of all ranks and

classes throughout the vast oriental peninsula, the period of human life falls a full *eighth* short of its European range. But as this does not quadrate with the opinions of speculative philosophers at home, who *will* equalize the age of man all over the world, I shall cite the authority of a very intelligent officer, whom I have so often quoted before, and who had some twenty years' acquaintance with the country in question. "Longevity," says he," certainly is not characteristic of India. Whether this is owing to the excessive heat, or the indolence of the upper, and drudgery of the lower classes, it may be difficult to decide; but certain it is, that we rarely see an instance of *any one* arriving at sixty years' age."*

From indigenous customs, then, in respect to animal and vegetable food, we can draw no inference that absolutely prohibits the *former*, but enough to convince us, that during the first years of our sojourn between the tropics, we should lean towards the Hindoo model; and as the tone of the constitution becomes lowered, or assimilated, we may safely adopt the Mahomedan manners.

The period of our meals, in hot climates, indeed in all climates, is worthy of notice. Both Hindoo and Mahomedan breakfast early—generally about sunrise. Their early hours cannot be too closely imitated by Europeans. This is a very substantial meal, particularly with the Hin-

* Oriental Field Sports, vol. 1, p. 236.

doo; for rarely does he take any thing else till the evening: a custom, in my opinion, that would be very prejudicial to Europeans. Breakfasts, among the latter, are often productive of more injury than dinners, especially where fish, eggs, ham, &c. &c. are devoured without mercy, as not unfrequently happens. Many a nauseous dose of medicine have I been obliged to swallow, from indulging too freely in these articles; but I saw my error before it was too late. Most people suppose, that as a good appetite in the morning is a sign of health, so they cannot do sufficient honour to the breakfast-table; but the stomach, though it may relish, is seldom equal to the digestion of such alimentary substances as those alluded to, where a sound night's rest has hardly ever been procured. I have seen the most unequivocal bad effects from heavy breakfasts, in others, as well as in my own person; and I shall relate one instance, that may well serve as a drawback on the pleasures of a luxurious *dejeunee* in the East. Mr. B——, purser of a frigate, a gentleman well known on the station, was as determined a *bon-vivant* as ever I had the honour of being acquainted with.—"*De mortuis nil nisi verum.*"—He certainly had possessed a most excellent constitution; for I have seen it perform prodigies, and falsify the most confident medical prognostications! He had served many years in the West Indies, where he passed through the usual ordeals of yellow fever, dysentery, &c. with *eclat;* and he came to the East, with the most sovereign contempt for every maxim of

the hygeian goddess! Although he never neglected, even by accident, his daily and nightly libations to the rosy god, yet no sportsman on the Caledonian mountains, could do more justice to a highland breakfast than he. Indeed, he rarely went to sea, without an ample private stock of epicurean provender; and I have seen him thrown into a violent paroxysm of rage, on finding that two nice looking hams, which he had purchased in China, resisted all attacks of the knife, in consequence of a certain *ligneous* principle, which "FUKKI" had contrived to substitute, with admirable dexterity, for the more savoury fibres of the porker! The items of the *last* breakfast which he made, minuted on the spot by a *German* surgeon, who attended him, are now before me. The prominent articles were, four hard-boiled eggs, two dried fishes, two plates of rice, with chillies, condiments, and a proportionate allowance of bread, butter, coffee, &c. &c. Many a time had I seen him indulge in this kind of fare, with perfect impunity; but all things have an end, and this proved his final breakfast! He was almost immediately taken ill, and continued several days in the greatest agony imaginable!

——————— Sed illum
Dolorem peperet cibus imperfectus et hærens
Ardenti stomacho!

Notwithstanding all the efforts of the surgeon, no passage downwards could ever be procured, till a few hours before his death, when mor-

tification relaxed all strictures!! Let the fate of the dead prove a warning to the living!

The newly arrived European should content himself with plain breakfasts of bread and butter, with tea or coffee; and avoid indulging in meat, fish, eggs, or buttered toast. The latter often occasions rancidity, with nausea at the stomach, and increases the secretion of bile, already in excess. Indeed, a glance at master *Babachee,* buttering our toast with the greasy wing of a fowl, or an old, dirty piece of rag, will have more effect in restraining the consumption of this article, than any didactic precept which I can lay down; and a *picturesque* sight of this kind may be procured any morning, by taking a stroll in the purlieus of the kitchen.

In regard to dinner, Europeans appear, of late, to study convenience rather than health, by deferring that meal till sunset. This was not the case some twenty or thirty years ago; and many families, even now, dine at a much earlier hour, except when tyrant custom and ceremony prevent them. In truth, the modern dinner in India is perfectly superfluous, and too generally hurtful. The *tiffin,* at one o'clock, consisting of light curries, or the like, with a glass or two of wine, and some fruit, is a natural, a necessary, and a salutary repast. But the gorgeous table—the savoury viands—the stimulating wines of the evening feast, prolonged by the fascination of social converse, greatly exacerbate the nocturnal paroxysm of fever

imposed on us by the hand of Nature, and break, with feverish dreams, the hours which should be dedicated to repose! The consequences resulting from this are quite obvious. It may be observed, that the natives themselves make their principal meal at sunset, when the heat is less distressing, and insects neither so numerous nor teazing; but it must be recollected, that they, in general, eat nothing between breakfast and dinner; and that among the Hindoos and lower classes of Mahomedans, &c. &c. the evening meal is by no means of a stimulating quality, while no provocative variety, or other adventitious circumstances, can have much effect in goading the appetite beyond its natural level. Add to this, that in the upper provinces, among Mahomedans of distinction, who can afford more substantial, and animal food, the dinner hour is *one or two o'clock*, and after that, little or nothing, except coffee, sweetmeats or fruit, is taken during the evening.

He, then, who consults his health in the Eastern world, or in any tropical climate, will beware of indulging in this *second* and *unnecessary* dinner, particularly during the period of his probation; but will rather be satisfied with the meridian repast, as the *principal* meal, when tea or coffee, at six or seven o'clock in the evening, will be found a grateful refreshment. After this, his rest will be as natural and refreshing, as can be expected in such a climate; and he will rise next morning with infinitely more vigour, than if he had crowned a sump-

tuous dinner with a bottle of wine the preceding evening. Let but a trial of one week put these directions to the test, and they will be found to have a more substantial foundation than *theory*.

Of supper it is not necessary to speak, as it is a mere matter of ceremony in hot climates, excepting after assemblies, or on some public occasions, which indeed are badly suited to the torrid zone.

A limited indulgence in fruits, during the first year, is prudent. Although I myself never had any reason to believe that they actually occasioned dysentery, yet, where the intestines are *already* in an irritable state, from irregular or vitiated secretions of bile, they certainly tend to increase that irritability, and consequently *predispose* to the complaint in question. Particular kinds of fruit, too, have peculiar effects on certain constitutions. Thus, *mangoes* have something stimulating and heating in them, of a terebinthinate nature, which not seldom brings out a plentiful crop of pustules, or even boils, on the unseasoned European. A patient of mine, who died from the irritation of an eruption of this kind, had been much addicted to an unrestrained indulgence in fruit, particularly mangoes ;—indeed their effect in this way is familiarly known in India. Neither is pine-apple (though very delicious) the safest fruit to make too free with, at first. Good ripe shaddocks are very grateful in hot weather, from their subacid and cooling juice, so well adapted to allay the unpleasant sensation of thirst. Plantains and bananas are

wholesome and nutritious, especially when frittered. The spices and condiments of the country, as I before hinted, should be reserved for those ulterior periods of our residence in hot climates, when the tone of the constitution is lowered, and the stomach participates in the general relaxation. They are then safe and salutary.

DRINK.

SEC. 3.—I SHALL not here attempt to prove, that WATER is the simple and salutary beverage designed by Nature for man, as well as other animals. In every nation, even the most refined and modern, a great majority appear, by their practice at least, to entertain no such belief. They have, with no small ingenuity, contrived so to medicate the native fountain, that they are always either outstripping, or lagging behind, the placid stream of life! The same magic bowl which, this moment,

> "Can pour remotest rapture on the sight,"

and raise its votaries into heroes and demi-gods, will, in a few hours, sink them beneath the level of the brute creation!!

> Instant her circling wand the goddess waves,
> To hogs transforms them, and the stye receives!
> No more is seen the human face divine,
> Head, face, and members, bristle into swine!

The moralist and philosopher have long descanted on this theme, with little success; for, until people begin to feel the corporeal effects of

intemperance, a deaf ear is turned to the most impressive harangues against that deplorable propensity; and even then, but very few have resolution and fortitude to stem the evil habit! Let us do our duty, however, in conscientiously pourtraying the effects of drink in a tropical climate.

I have already observed, that the grand secret, or fundamental rule, for preserving health in hot countries, is, "TO KEEP THE BODY COOL." I have also alluded to the strong sympathy that subsists between the skin and several internal organs, as the stomach, liver, and intestinal canal. On this principle, common sense alone would point out the propriety of avoiding heating and stimulating drink, for the same reasons that we endeavour to guard against the high temperature of the climate. But no; a wretched, sensual theory has spread from the vulgar to many in the profession (who ought to know better) that since the heat of the climate occasions a profuse perspiration, and consequently renders that discharge the more liable to a sudden check, we are to aid and assist these natural causes by the use of "*gently stimulating liquids,*" and, of course, increase those very effects which we pretend to obviate! "A little shrub and water," says Mr. Curtis, (Diseases of India) "or madeira and water, *between meals,* is useful, and in some measure *necessary*, to keep up the tone of the digestive organs, and to supply [i. e. augment] the waste occasioned by an excessive perspiration."—p. 281. I can assure Mr. Curtis that, however *necessary* this practice might have been thought in his time, (thirty years ago) it is *now* considered not only *unnecessary,* but disgraceful; and that in no respectable circle in the

Eastern world, beyond the confines of the "*Punch-house,*" where no European of character will ever be seen, [especially in Bengal] is any sangaree, porter-cup, or other "gently stimulating liquid," made use of "between meals." And I take this opportunity of informing and warning every *new-comer,* that the very call of "*brandy-shrub-pauny!*" will endanger his being marked as a "*vitandus est,*" and that a perseverance in such habit will inevitably, and very quickly too, exclude him from every estimable circle of his own countrymen, who will not fail to note him as in the high road to ruin!

Nor did these most excellent habits of temperance originate in any medical precepts or admonitions—far from it! The professional adviser was by no means solicitous to inculcate a *doctrine,* which it might not suit his taste to *practise.* But in a vast empire, held by the frail tenure of opinion, and especially where the current of religious prejudices, Brahmin as well as Moslem, ran strong against intoxication, it was soon found necessary, from imperious motives of policy, rather than of health, to discourage every *tendency* towards the acquisition of such dangerous habits. Hence the inebriate was justly considered as not merely culpable in destroying his own health, *individually,* but as deteriorating the European character in the eyes of those Natives, whom it was desirable at all times to impress with a deep sense of our superiority. Happily, what was promotive of our *interest,* was preservative of our health, as well as conducive to our happiness; and the general temperance in this respect, which now characterises the Anglo-Asiatic circles of society, as contrasted

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with Anglo-West-Indian manners, must utterly confound those fine-spun theories, which the votaries of porter-cup, sangaree, and other "gently stimulating liquids," have invented about—"supporting perspiration," "keeping up the tone of the digestive organs," &c. all which, *experience* has proved to be not only *ideal*, but *pernicious!*" "On the meeting together of a company of this class," [planters] says a modern writer on the West Indies, "they were accustomed, *invariably*, to sit and continue swilling strong punch, (sometimes half rum) and smoking segars, till they could neither see nor stand; and he who could swallow the greatest quantity of this *liquid fire*, or infuse in it the greatest quantity of ardent spirits, was considered the cleverest fellow." *Account of Jamaica and its Inhabitants*, 1808.—p. 189. And again: "The inferior orders, in the towns, are by no means exempt from the reproach of intemperance; nor are the more *opulent classes*, generally speaking, *behind hand* in this respect. Sangaree, arrac-punch, and other potations, are *pretty freely drank, early in the day*, in the taverns."—p. 199.

I can conceive only one plausible argument which the transatlantic Brunonian can adduce, in support of his doctrine, after the unwelcome *denouement* which I have brought forward, respecting oriental customs; namely, that as the range of atmospherical heat, in the West Indies, is several degrees *below* that of the East, it may be necessary to counterbalance this deficit of *external* heat, by the more assiduous application of *internal* stimulus!! For this hint he will, no

doubt, be much obliged to me, as he must consider the argument irresistible.

I may here remark, that too much praise cannot be given to the captains of East-Indiamen, for the lessons of temperance and decorum that are generally taught on board their ships (whatever may be the motives) during the outward bound passage. The very best effects result from this early initiatory discipline, in a thousand different ways. Rarely, indeed, in the vessels alluded to, does the decanter make more than half a dozen tours (often not so many) after the cloth is removed at dinner, before the company disperse, by a delicate, but well known signal, either to take the air upon deck, or amuse themselves with books—chess—music, or the like, till the evening. After a very frugal supper, the bottle makes a tour or two, when the significant toast of—"*Good night, ladies and gentlemen!*" sends every one, at an early hour, to repose.

It may readily be conceived, of what incalculable utility five or six months' *regimen* of this kind must prove to Europeans, approaching a tropical climate; especially when policy and imperious custom will enforce its continuance there! It is true, that at each of the presidencies, there may be found several individuals of the old bacchanalian school, whose wit, humour, or vocal powers, are sometimes courted, on particular occasions, to—"set the table in a roar." But let not such expect to mingle in the *domestic* circles of respectable society (where alone true enjoyment is to be found) either in the civil or military departments. No such thing as a

regimental mess exists in India; and as convivial association thus becomes perfectly optional, the least tendency to inebriety will assuredly *insulate* the individual who, from solitary indulgence and reflection, soon falls a martyr to the baneful effects of INTEMPERANCE!

> Add, that your means, your health, your parts decay;
> Your friends avoid you; brutishly transform'd,
> They hardly know you; or, if one remains
> To wish you well—he wishes you in heaven!!

The navy presents a different prospect. Few of the latter have an opportunity of becoming acquainted with the domestic manners either of the Natives or Europeans on shore; and therefore, they pursue their usual course of living, both in food and drink, for a considerable time after arriving on the station; verifying the observation, that—

> Cœlum non animum mutant qui transmare currunt."

And although they are fortunately less exposed, in general, to many of those causes which aggravate the effects of inebriety ashore, yet much injury is produced before they see their error.

A very common opinion prevails, even in the profession,—and I am not prepared to deny its validity, that during the operation of wine or spirits on the human frame, we are better able to resist the agency of certain morbid causes, as contagion, marsh effluvium, cold, &c. But, let it be remembered, that it is only while *the excitement* lasts, that we can hope for any superior

degree of immunity from the said noxious agents; after which we become doubly disposed towards their reception and operation! Nor am I fully convinced, by all the stories I have heard or read, that *inebriety* has, in any case or emergency, even a *momentary* superiority over *habitual* temperance.

The delusion in respect to vinous and spirituous potations, in hot climates, is kept up chiefly by this circumstance, that their bad effects are, in reality, not so conspicuous as one would expect; and they rather predispose to, and aggravate the various causes of disease resulting from climate, than produce direct indisposition themselves; consequently, superficial observation places their effects to other agents. But the truth is, that, as *drunkenness,* in a moral point of view, leads to every vice; so, in a medical point of view, it accelerates the attack, and renders more difficult the cure of every disease; more particularly the diseases of hot climates; because it has a *specific* effect, I may say, on those very organs, to which the deleterious influence of climate is peculiarly directed. If the northern inebriate is proverbially subject to hepatic derangement, where the coldness of the atmosphere powerfully counterpoises, by its action on the surface, the internal injury induced by strong drink, how can the Anglo-East or West-Indian expect to escape, when the external and internal causes run in perfect unison, and promote each other's effects by a wonderful sympathy?

It has been considered wise, as I before hinted, to take the seasoned European for our

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model, in every thing that respects our *regime* of the non-naturals. "Strangers," says Mr. Curtis, "arriving in India, if they regard the preservation of health, cannot too soon adopt the modes of living followed by the experienced European residents there." I do not conceive this to be a good medical maxim, even in India, where temperance is scarcely a virtue; and certain I am, that it is a most dangerous precept in the West, for reasons which I have lately rendered sufficiently obvious. It confounds all discrimination between the very different habits of body, which the seasoned and unseasoned possess. It is consonant with experience, as well as theory, that the *former* class may indulge in the luxuries of the table, with infinitely less risk than the *latter;* and this should ever be held in view. In short, the nearer we approach to a perfectly *aqueous* regimen in drink, during the first year at least, so much the better chance have we of avoiding sickness; and the more slowly and gradually we deviate from this afterwards, so much the more retentive will we be of that invaluable blessing—HEALTH!

It might appear very reasonable, that in a climate where *ennui* reigns triumphant, and an unaccountable languor pervades both mind and body, we should cheer our drooping spirits with the mirth-inspiring bowl.—

> "Boy, let yon *liquid ruby* flow,
> And bid thy *pensive heart* be glad,
> Whate'er the frowning zealots say:—
> Tell them, their Eden cannot shew
> A stream so clear as Rocnabad."

But Hafiz, though an excellent poet, and, like his predecessor, Homer, a votary of Bacchus, was not much of a physician; and without doubt, this "*liquid ruby*," as he calls it, is one of the worst of all prescriptions for a "pensive heart." I remember a gentleman at Prince of Wales's Island, [Mr. S.] some years ago, who was remarkable for his convivial talents and flow of spirits. The first time I happened to be in a large company with him, I attributed his animation and hilarity to the wine, and expected to see them flag, as is usual, when the first effects of the bottle were past off; but I was surprised to find them maintain a uniform level, after many younger heroes had bowed to the rosy god. I now contrived to get near him, and enter into conversation, when he disclosed the secret, by assuring me he had drank nothing but water for many years in India; that in consequence, his health was excellent—his spirits free—his mental faculties unclouded, although far advanced on time's list: in short, that he could conscientiously recommend the "*antediluvian*" beverage, as he termed it, to every one that sojourned in a tropical climate.

But I am not so *utopian*, as to expect that this salutary example will be generally followed; though it may lead a few to imitate it, till the constitution is naturalized, when the *pleasures of temperance* may probably induce them to persevere. At all events, the newcomer should never exceed three or four glasses of wine after dinner, or, on any account, admit

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it to his lips between meals, unless excessive fatigue and thirst rendered drink indispensible, when cold water might be injurious. Spirits, of course, should be utterly proscribed.

One circumstance, however, should always be kept in mind, to wit, that when a course of temperance is fully entered on, no consideration should induce us to commit an occasional debauch, especially during our seasoning; for we are at those times in infinitely greater danger of endemic attacks, than the habitual bacchanal.

It has been remarked, by many sensible observers, that *acids* are injurious to the stomach and bowels, between the tropics. I will not contradict, though I cannot confirm this observation. I never saw any bad effects myself from their use; and I knew some medical gentlemen, long resident in India, who drank very freely of sherbet, at all times when thirst was troublesome. Nature seems to point out the vegetable acids, in hot climates, as grateful in allaying drought, and diffusing a coolness from the stomach all over the body. It is very probable, however, that where the alimentary canal is in an irritable state, they may excite diarrhœa; and this last frequently leads to more serious disturbance in the functions of the digestive organs. Where the tone of the stomach, too, is weak, (as is often the case) and that organ is disposed to generate acidity, the acids in question may readily prove injurious.

It has also been said, that a too free use of cocoa-nut water, or milk, as it is sometimes called, has produced bowel complaints. My own observations are not in unison with this remark. It was my favourite beverage, and never did I feel in my own person, or perceive in others, the slightest inconvenience from indulging in this most delicious liquid. It ought, however, to be fresh drawn, limpid, sweet, and never drank after the deposit on the inside of the shell begins to assume the form of a consistent crust.

I have alluded to the danger of drinking cold fluids when the body is heated, and particularly where perspiration has continued profuse for any time. I could furnish many instances, illustrative of this position, but shall only adduce the following:—

Lieutenant Britton, of the Royal Marines, (at that time belonging to His Majesty's ship Grampus) a very fine young gentleman, had heated and fatigued himself, by driving about the streets and bazars of Calcutta, in the autumn of 1803, in which state, he had the imprudence to swallow an ice-cream, for the purpose of allaying his thirst. Of the effects of this he died, a few weeks afterwards, on his passage to Madras, under my own care. It brought on inflammation about the fauces, which subsequently spread down along the membrane lining the trachea, to the lungs, producing symptoms exactly resembling croup. He died in dreadful agonies, flying from one part of the ship to another, for relief from the

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dyspnœa and oppression on his chest. Various remedies were tried, but all in vain.—Let this prove a caution to the living!*

* For numerous examples of this kind, see Currie's Reports.

EXERCISE, &c.

SECT. 4.—This is one of the luxuries of a northern climate, to which we must, in a great measure, bid adieu, between the tropics. The principal object and effect of exercise in the *former* situation, appear to consist in keeping up a proper balance in the circulation—in supporting the functions of the skin, and promoting the various secretions. But perspiration and certain secretions (the biliary, for instance) being already in excess, in equatorial regions, *a perseverance* in our customary European exercises, would prove highly injurious, and often does so, by greatly aggravating the natural effects of climate. Nevertheless, as this *excess* very soon leads to debility and *diminished action*, in the functions alluded to, with a corresponding *inequilibrium* of the blood, so it is necessary to counteract these, by such active or passive exercise as the climate will admit, *at particular periods of the day or year;* a discrimination imperiously demanded, if we mean to preserve our health. Thus, when

——————Vertical the sun
Darts on the head direct his forceful rays,

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for several hours in the day, on the plains of India, not a leaf is seen to move—every animated being retreats under cover—and even the "*adjutant*" [gigantic crane] of Bengal, whose stomach will bear an ounce of emetic tartar without complaining, soars out of the reach of the earth's reflected heat, and either perches on the highest pinnacles of lofty buildings, or hovers in the upper regions of the air, a scarcely discernible speck.

> ———Now, while the blood
> Too much already maddens in the veins,
> And all the finer fluids through the skin
> Explore their flight,

the peaceful Hindoo retires, as it were instinctively, to the innermost apartment of his humble shed, where both light and heat are excluded. There he sits quietly, in the midst of his family, regaling himself with cold water or sherbet, while a mild, but pretty copious perspiration, flows from every pore, and contributes powerfully to his refrigeration.*

As soon as the cool of the evening, however, commences, all Nature becomes suddenly renovated, and both men and animals swarm in myriads from their respective haunts! Then it is, that the esplanade at Calcutta, and the mount road near Madras, pour on the asto-

* What with the smoke of the house [for there is no chimney] and the oil on his skin, a native is hardly ever annoyed by mosquittoes, as foreigners are.

nished eye of the stranger a vast assemblage of all nations, casts, and complexions, comprehending an endless and unequalled variety of costume and character, hurrying to and fro, in all kinds of vehicles as well as on foot, enjoying the refreshing air of the evening! The same scene is witnessed early in the morning, particularly during the cool season, in Bengal; but in the rainy season there, and while the hot land-winds prevail on the Coromandel coast, the life of a European is irksome to the last degree! Perspiration being then profuse, the most trifling exertion is followed by languor and lassitude. Cooped up behind a *tatty*, or lolling about under a *punka*, he can neither amuse his mind, nor exercise his body, and *tædium vitæ* reigns uncontrolled during these gloomy periods! It need hardly be urged, how injurious active exercises would be to Europeans, at such times; or indeed, during the heat of the day, at any time. Yet hundreds annually perish from this very cause; particularly in the West Indies, after each influx of Europeans during war!

Who would expect to find *dancing* a prominent amusement in a tropical climate? The natives of the West Indies are excessively fond of this exercise; but in the East there are *wise men* still, for instead of dancing themselves, they employ the *nautch-girls*, whose *principal* business consists in

> "Gayly *tripping* as they go
> On the light fantastic toe."

Exercise.

It might seem ill-natured if I animadverted on the custom of my fair countrywomen, who *shew off* with such eclat, at the *pantheon* near Madras, regardless of all thermometrical indications. The practice is not *salutary,* however *politic* it may be found—and it certainly does not *appear* to agree so well with *married* ladies as with *virgins,* whatever may be the reason.

I have shewn that the range of atmospherical heat is considerably higher in the East than in the West, and that in the latter part of the world they are exempted from hot land-winds, and more favoured with cool sea-breezes, than the inhabitants of the former, Still, Europeans, although they may not enjoy better health, experience infinitely less mortality in the peninsula of India, than in the West-Indian Archipelago. If a thousand European troops, for instance, are debarked at Kingston, Jamaica, and an equal number at Madras, at the same time, we shall find the former lose, in all probability, one-third—perhaps one-half their number, during the first eighteen months; while the other corps will not lose more than a thirtieth or fortieth part of their total, in the same period. But if we examine the two bodies of men at the end of five or six years. we shall not find the same disproportion. Hepatic and dysenteric complaints, by that time, will have brought the Eastern corps somewhat nearer a *par* with their Western countrymen. The great *onus* of disease bears on the *first year* of a European's residence in the West Indies, because that is the period within which the endemic or yellow fever makes its attack; after which, he feels the effects

of climate in a more moderate degree. In the East, fever (excepting in Bengal) is by no means general; and the first year is not distinguished by mortality. But the climate being much hotter, and the atmospherical vicissitudes more sudden and extensive, each subsequent year produces great mischief in important organs; and the wonder is, why he does not suffer infinitely more than the Anglo-West Indian!

I have already adduced several causes for this disparity; (vide pages 103-4-5) one, the greater length of an East-India voyage, with its concomitant abstemious regime, the reverse of which so much predisposes to the violent assaults of the Western endemic. Another, is the laudable temperance and decorum, prescribed by general custom in the Eastern world, obviating, in no slight degree, the deleterious influence of climate. I shall now proceed to make some observations on other differences in the modes of life, and means of preserving health in the two countries, as elucidatory of this subject, hoping that the interest and utility of the discussion will sufficiently excuse its informal position in this section.

First, then, the HOUSES of the East, whether permanent mansions or temporary *bungalows,* are better calcualted for counteracting the heat of the atmosphere than those of the West. As there is no dread of earthquakes or hurricanes, in the former place, the dwellings are *solid*—the apartments lofty—the windows large, and the floors, in general, composed of *tarras,* which, being often sprinkled with water, is cool to the feet, and diffuses an agreeable refrigeration through the room. Add

to this, that the spacious *verendahs* ward off the glare of the sun, and *reflected* heat, (an important consideration) by day, and afford a most pleasant retreat in the evening, for enjoying the cool air. The *tatties*, which are affixed to the doors and other apertures, in the hot season, and kept constantly wet by *bheesties*, or water-carriers, whereby the breeze is cooled by evaporation, in its passage through the humid grass, of which the tatty is constructed, prove a very salutary and grateful defence against the hot land-winds; since this simple expedient makes a difference of twenty or thirty degrees, between the *bheesty's* and the *European's* side of the *tatty!* It appears, however, that in the East we have not been sufficiently attentive to the prevention of *reflected heat and glare;* a circumstance of infinitely greater consequence than the freest ventilation. Let us learn from the native. His habitation has very few apertures, and those high up. His floor, and the inside of the walls, are moistened two or three times a-day, with *a solution of cow-dung in water*, which, however disagreeable to the olfactories of a European, keeps the interior of the dwelling as cool as it is dark. Here he sits on his mat, enjoying his aqueous, but salutary beverage; and with such simple means and materials, counteracts the heat of the climate more effectually than the European, in his superb and costly edifice. "Those who live in houses," says Dr. Winterbottom, "the walls of which are plastered with mud, frequently, during the continuance of hot weather, wet the walls and floor, to cool the air: this is a very *hurtful* practice, as it renders the air *moist*, and

brings it nearly into the state it is in during the rainy season."—On Hot Climates, p. 16. This, like many other observations founded on *contracted* views, and favourite theories, is completely contradicted by the broad basis of facts. It reminds me of a passage in Dr. Robertson's third volume on the Diseases of Seamen, where he undertakes to prove, that it is the *moisture* of the air over marshes that causes disease; and, in short, questions whether *miasmata* ever produced fever——*except on board the* WEAZLE SLOOP *of war, when he was surgeon of her, on the coast of Africa!!*

The upper classes of natives, also, have not been inattentive to the prevention of reflected heat. The houses of Benares, for instance, are of solid stone, and generally six stories high, with small windows. The streets are so extremely narrow, that the sun has very little access to them; obviating thereby the disagreeable effects of glare. The windows are small, because, from the height of the houses, it would be impracticable to apply tatties during the hot winds; whereas, in low country-houses, or bungalows, they are large, in order to extend the refrigerating influence of the tatties.

The dazzling whiteness of European houses in India, is not only inconvenient, but in some degree injurious, to the eyes, at least; and a verendah, entirely encompassing the mansion, would contribute greatly to the refrigeration of the interior apartments; the most comfortable of which, by the by, on the ground floor, used to be appropriated to the use of palankeens and

lumber, but are now wisely converted into offices, &c.

The *punka,* suspended from the lofty ceilings of the Eastern rooms, and kept waving overhead, especially during our repasts, is a very *necessary* piece of what may be fastidiously styled "Asiatic luxury." Indeed, were it not for this and the *tatty,* some parts of India would be scarcely habitable by Europeans, at certain seasons.

It is observed, in a recent "Account of Jamaica," by a gentleman long resident there, that the "*Asiatic effeminacy*" of being carried about in a palankeen, has not yet reached the West Indies. It would be well if several other Asiatic effeminacies [temperance, for example] were more generally adopted in the transatlantic islands. But that the Anglo-West Indian rejects this luxurious vehicle, *merely* through any scruple respecting its *effeminacy,* is rather too much for credence. If a dozen of sturdy *balasore-bearers* could be hired in Jamaica for the trifling sum of four or five shillings a-day, including all expences, the Western nabob and nabobess would soon condescend to recline in their palankeens, with as much state as their "*effeminate*" brethren of the East. But the plain reason is, that neither the country itself, nor its *imported* population, will admit of a conveyance, which is cheap, elegant, and convenient, on the sultry plains of India.*

* Cheeks of kuss-kuss, a sort of grass, of which the *tatties* are made, being affixed to the doors of palankeens, and kept

Gestation in a palankeen, however, is a species of passive exercise exceedingly well adapted to a tropical climate. The languid circulation of the blood in those who have been long resident there, is pointedly evinced by the inclination which every one feels for raising the lower extremities on a parallel with the body, when at rest; and this object is completely attained in the palankeen, which indeed renders it a peculiarly agreeable vehicle. On the same principle we may explain the pleasure and the utility of *shampooing*, where the gentle pressure and friction of a soft hand, over the surface of the body, but particularly the limbs, invigorate the circulation after fatigue, and excite the insensible cuticular secretion. I much wonder that the *swing* is not more used between the tropics. In chronic derangements of the viscera it must be salutary, by its tendency to determine to the surface, and relax the subcutaneous vessels, which are generally torpid in those diseases. It might be practised in the evenings and mornings—and within doors, when the state of the weather, or other circumstances, did not permit gestation, or active exercise in the open air.

A propensity towards *smoking* would not be expected, *a priori*, in a tropical climate Yet the practice is very general among Europeans and Natives, and seems to spring from that

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moist, enable Europeans to travel during the hottest weather. A wet *palampore*, or covering of calico, is a tolerable substitute.

listlessness and want of mental energy, so predominant in the character both of sojourners and permanent inhabitants of sultry latitudes. As the custom may not be insalutary at certain seasons of the year, in particular places, where marshy or other deleterious exhalations abound; and as it is often a succedaneum for more dangerous indulgences, it is best, perhaps, to pass it over with little comment. Yet, it has ever appeared to me a degrading habit, for a gentleman to become a *slave* to his hookah; and it is beyond endurance, to see a great, lusty *hooka-burdaar,* insinuate the pipe of his long *snake* into the delicate hand of a European lady, after dinner, who plies the machine with as much glee, as the sable and subordinate nymph of the country does her *nereaul!* For the honour and delicacy of the sex, this practice is by no means common; and the wonder is, that it ever should have existed.

In the article of *dress,* the Anglo-East Indians have a manifest advantage over those of the West. The delicious and salutary beverage of *cool drink,* too, is more in use among the former than the latter; partly owing to custom, and partly to opulence, which enables all ranks of Europeans to have their wine, water, &c. refrigerated with salt-petre, by a particular servant, set apart for that sole purpose, and called in Bengal—*Aub-daar.* The effect of these gelid potations on the stomach is diffused from thence, by sympathy, over the whole frame, but especially over the external surface of the body, counteracting, in no mean

degree, the natural influence of the climate. It is true, the bottles are brought on table, in the West Indies, enveloped in wetted napkins; but the effect is far inferior to that produced by the nitrous solution; and as the aubdaar's art is extended to all kinds of drink, this grateful luxury is ever at hand.

BATHING.

Sec. 5.—"I dare not," says Dr. Moseley, "recommend cold bathing; [in the West Indies] it is death with intemperance, and dangerous where there is any fault in the viscera. It is a luxury denied to *almost all*, except the sober and abstemious females, who well know the delight and advantage of it."—3d ed. p. 90. In respect to its being "death with intemperance," I believe that numerous inebriates could tell the doctor a different story; but, as it is presumed he never deigns to look into a modern author, he is unacquainted with various facts that militate against his dogma. The well-known instance of Mr. Weeks of Jamaica, who always went to sleep in cold water, when intoxicated, is sufficiently in point. Many a time have I seen it bring the drunken sailor to his senses at once; and *invariably* have I observed it to moderate the excitement of spirituous potations. I knew a gentleman who always went to sleep with his head on a *wet swab*, whenever he had taken a good "*mosquitto dose*;" and the consequence was, that he very seldom complained of head-ache next day. It is true, that if the cold bath be injudiciously used,

during the indirect debility *succeeding* a debauch, there may not be sufficient energy in the constitution to bring on re-action; and then, of course, it would be injurious. But this is a discrimination to which the genius of a Moseley could not stoop. Granting, however, what is certainly true, that the cold bath is dangerous, where visceral obstructions obtain, I cannot conceive why it should be denied to *almost all*, except females, in hot climates; unless we take those visceral derangements with us from Europe. Surely we might be allowed "the delight and advantage" of it, till these disordered states occur!

But whatever miserable *theory* may have discouraged bathing, and recommended the use of "gently stimulating liquids," in the West; wide *experience* has completely settled these points, long ago, in the East. There, the Native and European—the old and the young—the male and the female, resort to the BATH, as the greatest luxury, and the best preservative of health. In truth, it is one of the most powerful engines we possess, for counteracting the destructive influence of a hot climate, because it connects the most grateful sensations with the most salutary effects—it is indeed both *utile et dulce*.

Nature, or instinct itself, points out the external application of cold water to the body, to moderate the action of atmospheric heat. The buffalo is a familiar example. In the middle or hot period of the day, these animals repair to pools or marshes, and, wading in, either stand or lie down there, with every part except the nose immersed in water; or, where there is not

Bathing.

water, in the mud. At these times, by the by, it is very dangerous for Europeans to approach their haunts. They generally start up all at once, on being disturbed; and if one or two begin to snort and advance, the European is in imminent peril: nothing but the most rapid retreat to a place of safety, can secure his life! A red coat is a very unfortunate dress at such critical rencontres, as the animals in question have a decided antipathy to that colour.

It requires but little penetration to see, that the Brahminical injunctions, relating to ablutions, were founded on the preservation of *present* health to the body; though the *future* happiness of the soul was artfully held out as a superior inducement to the performance of these ceremonies, so necessary beneath a burning sky. The superstitious Hindoo rarely omits bathing, once or oftener, every day, in the sacred stream of the Ganges [or other consecrated river,] from which he is not deterred even by the voracious alligator, who frequently carries him off in the religious act! He generally wades out to a moderate depth—then, shutting his eyes, and putting his fingers into his ears, he squats himself under water two or three times—washes his *doty*—and returns, cool and contented, to his humble cot.

The Europeans and upper classes of Mahomedans, however, feeling no great desire for risking *tete-a-tete's* with sharks or alligators, are, in general, satisfied with a few pots of cold water thrown over their heads at home, once, twice, or oftener every day, according to the season of the year, and the person's own incli-

nations. This, being unattended either with fatigue or expence, is well adapted to all circumstances and situations, and answers the end in view effectually enough.

I have shewn, in various parts of this essay, that most of the diseases of tropical climates are attributable to *atmospherical vicissitudes*. Now, there is nothing that steels the human frame, with more certainty, against the effects of these, than the cold bath. We are the very creatures of habit; and consequently, *habituation* is the surest prophylactic. The cold bath not only counteracts the influence of heat, by suspending its operation for the time, but it safely inures us to the sudden application of cold, the fruitful source of so many disorders. By keeping the skin clean, cool, and soft, it moderates excessive, and supports a natural and equable cuticular discharge; and from the "*cutano-hepatic sympathy*," so often noticed, the functions of the liver partake of this salutary equilibrium—a circumstance hitherto overlooked. The use of the *cold bath*, then, should be regularly and daily persevered in, from the moment we enter the tropics; and when, from long residence there, the functions above alluded to begin to be irregular and defective, instead of in excess, we may prudently veer round, by degrees, to the *tepid bath*, which will be found a most valuable part of Tropical Hygiene among the *seasoned* Europeans.

As the cold bath is passive, (for it is seldom that the exhausting exertion of swimming accompanies it) so it may be used at any period of the day; though the mornings and evenings are

Bathing.

generally selected by Europeans in the East; immediately after leaving their couch, and before dinner. The bath is very refreshing, when we rise unrecruited from a bad night's rest; and powerfully obviates that train of nervous symptoms, so universally complained of by our countrymen between the tropics. Before dinner it is salutary, apparently from that connexion which subsists between the external surface of the body and the stomach, in consequence of which the tone of the latter is increased, and the disagreeable sensation of thirst removed, that might otherwise induce to too much potation during the repast. It is, however, imprudent to bathe while the process of digestion is going on in the stomach, as it disturbs that important operation. Where visceral derangements of any extent, particularly in the liver, have taken place, the cold bath must be hazardous, from the sudden afflux of blood directed from the surface to the interior, and also on account of the subsequent vascular re-action. The tepid bath, taking care to avoid a chill afterwards, will, in these cases, be substituted with great advantage.

SLEEP.

"Tir'd Nature's sweet restorer, balmy sleep!"

YOUNG.

SEC. 6.—WHEN we bid adieu to the temperate skies of Europe, with all its

"Long nights of revelry and ease,"

and enter the tropics, particularly in the Eastern hemisphere, we may calculate on a great falling off in this "solace of our woes." The disturbed repose, which we almost always experience there, has a greater influence on our constitutions than is generally imagined, notwithstanding the silence of authors on this subject. Nature will not be cozened with impunity. Whatever we detract from the period of our natural sleep; will assuredly be deducted in the end, from the natural range of our existence, independently of the predisposition to disease, which is thus perpetually generated. This is a melancholy reflection; but it is truth, and it should induce us to exert our rational faculties in obviating the evil.

Sleep.

When the sun withdraws his beams, and the intense heat of the atmosphere is mitigated, we might expect a comfortable interval of repose—but this would be a vain hope. A new host of foes instantly appear in arms to annoy us! Mosquitoes, ants, and cock-roaches, lead on the insect tribes—the bat wheels in aerial circuits over our heads, on which he sometimes condescends to alight, without ceremony—while the snake patrols about, in the purlieus of our apartment; coils himself up under our beds, or even deigns to become our *bedfellow*, without waiting the formality of an invitation!*

The great object of a European is to *sleep cool.* This enables him to procure more rest than he otherwise could do; and, by giving his frame a respite, as it were, from the great stimulus of heat, imparts to it a tone and vigour—or, as Dr. Darwin would say, "an accumulation of excitability," so necessary to meet the exhaustion of the ensuing day, as well as to repair that of the preceding.

A great waste of strength—indeed, of life, arises from our inability, on many accounts, to obtain this *cool* repose at night. Thus, rains, heavy dews, or exhalations from contiguous marshes, woods or jungles, often render it unsafe

* Many instances have occurred of snakes being found coiled away between children in bed. It is said, that if a chaffing-dish, filled with clear, live embers, be quietly placed on the floor of a room, in such emergencies, the reptiles will repair to it; especially if some new milk be also left near the chaffing dish. Great presence of mind is here necessary, in order not to disturb those dangerous creatures suddenly in their retreat.

or impossible to *sleep in the open air;* a practice fraught with the most beneficial consequences, where the abovementioned obstacles do not prevent its execution. But, pending the hot and dry season in Bengal, and almost always on the Coromandel coast, except during the hot land-winds, or at the change of the monsoons, we may indulge, not only with safety, but with infinite advantage, in the seemingly dangerous luxury of sleeping abroad in the open air.

I am well aware of the prejudices entertained against this custom, by great numbers, both in and out of the profession; but I am convinced, from personal experience and observation, that the practice, under the specified restrictions, is highly salutary, and I know it is sanctioned by some of the best-informed veterans, who have spent most part of their lives between the tropics. Speaking on this subject, the judicious Captain Williamson remarks that—"few, very few instances could be adduced, of any serious indisposition having attended it; while, on the other hand, it is confessed by all who have adopted it, that the greatest refreshment has ever resulted; enabling them to rise early, divested of that most distressing lassitude, attendant upon sleeping in an apartment absolutely communicating a febrile sensation, and peculiarly oppressive to the lungs."—*East-India Vade-Mecum.*

If it be observed, that I have all along held up to view the danger of atmospherical vicissitudes, to which this practice would *apparently* expose us; I answer, that I have also maintained, that *early habituation* to these was the

surest preservative against their injurious effects, as exemplified in the use of the bath. The truth is, however, that while the custom of sleeping in the open air steels the human frame against these same effects, it is, in reality, attended with less exposure to *sudden atmospherical transitions* than the opposite plan. Nature is ever indulgent when we observe her ways, and obey her dictates. Excepting the periods and places alluded to, the *transition, in the open air*, from the scorching heat of the day to the cool serenity of night, is gradual and easy. To this the human frame bends with safety, and we sink into a grateful and sound sleep, that renovates every corporeal and mental faculty. Whereas, those who exclude themselves from the breath of heaven, whether from necessity or inclination, become languid, from the *continued* operation of heat, and the want of repose; in consequence of which, the slightest aerial vicissitude (either from leaving their couch, or admitting a partial current of cool air, which they are often compelled to do) unhinges the tenor of their health, and deranges the functions of important organs! These are they, who require the afternoon *siesta*, and to whom, indeed, it is necessary, on account of the abridged refreshment and sleep of the night; while the others are able to go through the avocations of the day, without any such substitute—a great and manifest advantage!

> The nerves so temper'd never quit their tone—
> No chronic languors haunt such hardy breasts.

Indigenous custom is, generally speaking, in favour of sleeping in the open air, during the hot

seasons, in most Eastern countries. The practice, indeed, is less adopted in Bengal, for very obvious reasons, than on the Coromandel coast; but the Native sleeps much cooler, at all times, than the European, from this circumstance—that his bed seldom consists of more than a *mat*, while a piece of *calico* wrapped round him, supplies the place of bed-clothes. The more closely we imitate these, the better will it be for us. Indeed, a thin hair mattress, with a sheet and palampore, are the only requisites, independently of the thin gauze or mosquito curtains, which defend us from insects, and, when we sleep out on the *chabootah*, arrest any particles of moisture that may be floating in the atmosphere. Early hours are here indispensible. The fashionable nocturnal dissipation of Europe would soon cut the thread of our existence between the tropics. The order of Nature is never inverted with impunity, in the most temperate climates; beneath the torrid zone, it is certain destruction. The hour of retirement to repose should never be protracted beyond ten o'clock; and,

> "Soon as Aurora, daughter of the dawn,
> With roseate light impearls the dewey lawn,"

we should start from our couch, to enjoy the cool, the fragrant, and salubrious breath of morn.

The Passions.

THE PASSIONS.

SEC. 7.—I HAVE not alluded to the conduct of the Passions, because most of the precepts that apply to the regulation of them in cold climates, will be equally applicable here. But I may be permitted to correct an erroneous, (I think) though very general opinion, that there is something peculiar in a tropical climate, which excites certain passions in a higher degree, than in temperate regions. "There is," says Dr. Moseley," "in the inhabitants of hot climates, unless present sickness has an absolute control over the body, *a promptitude and bias to pleasure*, and an alienation from serious thought and deep reflection. The brilliancy of the skies, and the beauty of the atmosphere, conspire to influence the nerves against philosophy and her frigid tenets, and forbid their practice among the children of the sun."—p. 87. This is a very superficial, and a very false view of the affair. It is likewise a very immoral one; for it furnishes the dissolute libertine with a *physical* excuse for his debaucheries, when the real source may be traced to relaxation of religious and moral principles! I would ask Dr. Moseley to explain the reason why, if the "*promptitude* to pleasure be increased in a hot climate, the *ability* to pursue

or practise it, should be lessened?—a truth will known to every debauchee.

If the prevalence of polygamy in warm climates be adduced, I answer, that in countries where plurality of women is allowed, a minute and accurate investigation will shew, that among the lower orders of people the licence of the prophet is an empty compliment, for *they* find one wife quite enough. And as for the *higher ranks* of society, there is not *one in twenty* who has more than one wife; nor one in five hundred, who has more than two. If we compare this last part of the statement with the picture of life in the *beau monde* at home, we shall not have much reason to congratulate ourselves on the great *physical continence* resulting from our gloomy skies, as contrasted with the "bias to pleasure", which springs from levity of atmosphere between the tropics.

May we not attribute the premature decay of Native women in hot climates, to the long-established custom of early marriages in that sex, originally introduced by the despotism of man, but which has now effected an actual degeneracy in the female part of the creation. "It is a disgrace to a woman not to be married before twenty years of age; and we often see wives, with children at their breasts, as soon as they enter their teens." I have not a doubt that, to the continued operation of this cause, through a long series of centuries, is owing the deterioration in question; for it is not conformable to the known wisdom of the Creator, that such an inequality should *naturally* exist between the sexes.

But to return. The removal of religious and moral restraint—the temptations to vice—the

facility of the means, and the force of example, are the real causes of this "bias to pleasure;" and in respect to the *effects* of licentious indulgences between the tropics, I can assure my reader, that he will find, probably when it is too late, how much more dangerous and destructive they are than in Europe!

He now has explained to him the nature of this "propensity;" and as the principal cause resides neither in the air, nor the "brilliancy of the skies," but in his own breast, he has no excuse for permitting it to sprout into the wild luxuriance of unbridled excess.

The monotony of life, and the apathy of mind, so conspicuous among Europeans in hot climates, together with the obstacles to matrimony, too often lead to vicious and immoral connexions with Native females, which speedily sap the foundation of principles imbibed in early youth, and involve a train of consequences, not seldom embarrassing, if not embittering every subsequent period of life! It is here that a taste for some of the more refined and elegant species of literature, will prove an invaluable acquisition for dispelling *ennui*, the moth of mind and body.

NAVAL HYGIENE

AND

DISCIPLINE.

SEC. 8.—THE utility and importance of NAVAL HYGIENE and DISCIPLINE to a nation depending, whether in peace or in war, on her maritime superiority, might well claim a larger space for consideration than is here allotted them. But the volumes which have been written on the *former* of these subjects may now, perhaps, be compressed into a single section, without any material loss; and the latter, [naval discipline] so closely allied to the preceding, if not entirely comprehending it, is yet so—"new to epic lore," that little or nothing respecting it is on record, except the caricatures of Smollet, and the ponderous, formal code of "Naval Instructions;" which code, while it exhibits the outline, is far from portraying the minute, but not less expressive features of this interesting picture. *These* it will be my object to delineate, with all the impartiality and fidelity in my power; and if some of my observations should seem, at first sight, *unconnected* with the purport of this essay —the preservation of health, (which, however,

would be a false conclusion) yet, even so, the calm reflections of a philosophic, and in a great measure, unconcerned spectator, on those scenes which pass under his review, may not be totally unworthy the attention of those, whose situations and habits of life are very unfavourable to the cool deduction of unbiassed inferences, on points where contending interests, personal feelings, and "*esprit du corps,*" must ever clash.

If a civilian, *on shore,* can write a system of naval tactics, surely a medical man, who has spent the best part of his life on the ocean, may be allowed to offer his sentiments on that line of naval discipline, which essentially conduces to the health and happiness of a ship's crew.

At this moment, an "Essay on Naval Discipline," by Lieut. Hodgskin, of the Royal Navy, has come to my hands, and filled me with astonishment, not unmixed with dismay, at the evil consequences it is calculated to produce. With a pen dipped in the gall of disappointment, and an eye suffused with the jaundice of discontent—writhing under the penalty of an infraction of those laws which he stigmatizes, he has seized on the most vulnerable points of naval discipline, and thence drawn a hideous *caricatura,* in the shape of an inflammatory popular appeal!!

I shall only select a passage or two, to bear me out in this censure. "In thus presenting myself to the public," says he, "as a *discontented and disappointed man,* I am actuated *solely* by motives of candour and veracity."—Preface, p. xiv. The former part of the sentence will

be apt to throw a shade of doubt on the latter, and induce us to suspect, that his then frame of mind was not the best for discussing an important topic, as the following unqualified philippic will evince:—"I wish but just to direct the public attention to the most prominent figures in the picture of naval discipline: I believe they will find *all* its characters, *all* its shades, of the same dark hue; unenlightened by knowledge, *untinged with mercy or benevolence*, and reflecting the heaviest gloom over the character of man."—p. 37. His essay may be the offspring of reflection, but I am confident it is not that of extensive observation, or experience. Unbiassed it cannot be. It is indeed calculated for the meridian of democracy, and full of visionary speculations on the *perfectibility* of human nature, which I much fear Lieut. H. will never see realized.

As the essay is well-written, and speciously exaggerates the most *defective* parts of our naval code, I conceive it has a strong tendency to spread the flame of discontent far beyond the breast of its author; and to impress a very erroneous idea of naval manners, on the minds of that class of the community which furnishes our principal maritime resources. Mr. Hodgskin may live to regret the haste with which he has given vent to the ebullition of his resentment; but it will then be too late! It is a great pity, that his talents had not been employed in a more judicious manner. It is not by *execrating* a system, *in toto*, that we can hope to mend it; much better it is, to calmly and dispassionately point out the errors for gradual redress.

than overturn the whole fabric, to build an entire new edifice!

A ship of war may, with considerable analogy, be compared to a petty, dependent state, governed externally by certain general laws, but greatly influenced and modified by its own internal regulations. It is to the *latter*, of course, that the scope of my observations can be most usefully directed.

I shall set out with this proposition, which indeed will be found an indubitable truth—namely, that the grand or fundamental principle of naval discipline, as promotive of health and comfort, consists in so artfully *employing both mind and body, that the one may not be affected by apathy or chagrin, nor the other by indolence or over-exertion.*

In exact proportion as this principle is kept in view, and acted on, will the end and object of naval discipline be attained; and whenever it is disregarded, the inevitable consequences will be—anarchy and disease!

The above principle will explain, why different, and almost opposite systems of interior regulation, have been pursued with success; and why, while the principle itself was overlooked, each officer became attached to his own way of arriving at the object. Hence, "*tot homines—tot sententiæ,*" and the innumerable codes of orders suspended under the half-decks of ships throughout the navy.

The great evil attending this, is, that as it often happens that several captains in succession command the same ship, each insisting on a different, or, on some points, quite contrary plan

of regulations, the men lose respect for them, considering the majority of them as originating in individual caprice. On this account, one simple, uniform code of interior economy, signed by the Lords of the Admiralty, should be punctuall adhered to throughout the navy.

For the sake of rendering my ideas as explicit and familiar as possible, I shall class my observations under four distinct heads, viz. the CAPTAIN—the OFFICERS—the SURGEON—and the SEAMEN.

THE CAPTAIN.

Qui fœdore certo
Et premere et laxas sciret dare jussus habenas.

I AM now entering a difficult, perhaps a dangerous, and certainly an unbeaten path.* On the rectitude of my intentions, the justice of my remarks, and the utility of the investigation, I rest my hopes of acquittal, if not approbation, in the execution of the task which I have here imposed on myself.

It has been asserted, and probably not without foundation, that the captain of a ship of war has more absolute power over those entrusted to his command, than many despotic princes have over their subjects. However this may be, I will venture to affirm, that nine in ten of the officers in question stop short, not merely of the lawful range of their authority, but of its proper and salutary exercise.

That an occasional instance of tyranny and oppression should, from time to time, occur in so extended a navy as ours, need not excite surprise—the wonder is, that such should not frequently take place. Indeed, I have almost in-

* I do not consider Lt. Hodgskin's intemperate essay as of any assistance to me in this discussion.

variably remarked, that the higher a man's rank, and the more unlimited his power, in the naval service, he becomes, *cæteris paribus*, the less disposed to abuse them. This sentiment will not quadrate with the speculations of *regenerators*, but it is founded on observation. The most galling despotism I ever withessed, was always under petty delegated tyrants, whose crippled and temporary authority seemed the strongest provocative to aggressive and domineering sway!

The command of a ship of war is a most important and difficult charge. The false estimate which is formed of its facility, by young officers, is a prolific source of evil! They think that nothing can be more easy than to give orders, which *must* be obeyed. But, in my apprehension, a Captain's duty consists not so much in dispensing orders himself, as in seeing that they are properly issued by the officers, and executed by the men. *Hic labor, hoc opus est!* Here it is, that judgment, temper, and discrimination, are essential requisites. Like the centripetal and centrifugal forces, there is a constant struggle between supererogation on the part of the officers, and evasion or resistance on the part of the men. There is no power but that of the Captain, which can keep these in equipoise; and the least aberration, in him, is sure to disturb the harmonious co-operation of the whole, and facilitate the introduction of disease, as well as discontent. I shall glance hastily at the two great obliquities into which many officers of this class are drawn from the happy medium.

The Captain.

First, of the RIGID DISCIPLINARIAN; or, as he is usually styled, the SUPPORTER OF HIS OFFICERS. There can be no possible objection to a Captain's supporting his officers, provided they are *only* doing their duty. But, alas! they are *mortals*—often, young and unreflecting mortals! and—*errare est humanum.* Here the maxim is, to punish severely at the suggestion of the complaining officer, and always to presume that the man is in fault. It must be confessed, that this plan pretty generally insures good order, discipline, and *consequently* health; yet it is not without attendant dangers. Calculating on this support, young officers of irritable dispositions will often harrass the men—brow-beat them—and even have them brought to the gangway, where "the punishment *may* exceed the offence."

Laying aside the moral and most amiable feelings of our nature, which, refined by the mild precepts of Christianity, revolt at the idea of cruelty towards our fellow-creatures, whose persons and liberties are committed to our charge, there is a risk of either breaking the spirit of a crew, or goading them on to deeds of violence and insubordination; in both of which cases, their health is invariably deteriorated.

The other extreme is, where a captain "*courts popularity*" with the men—too often at the expence of the officers. The maxim here is——

Parcere subjectis et debellare superbos.

This is the source of great misery and discontent among the officers; and, strange as it may

appear, it rarely, if ever, contributes to the health or happiness of the crew. The latter are not slow in perceiving the disposition of the commander, and never fail to take every possible advantage of it. In a thousand irritating, but indescribable ways, they will contrive to embarrass and provoke the subordinate officer in the execution of his duty; and if he makes any complaint, the charge appears so undefined and trifling, that he obtains no redress. To keep up the deception, they are ever on the watch when the Captain makes his appearance on the quarter-deck, or carries on any duty himself, at which times, every evolution is performed by them with the utmost precision and alacrity, confirming the Captain in his opinion, that all the fault lies on the side of his officers! Here, laziness, apathy, and skulking evasion, will disseminate the seeds of disease; and a long sick-list will very generally characterize the ship that is disciplined on this model.

Having sketched out the two extremes that are to be avoided, may I be permitted to offer a few hints on that system of conduct which appears to me becoming in a wise and enlightened commander.

He should aim at *consistency*. This is only to be attained by always *reflecting* before the promulgation of an order, or regulation of any consequence, so that the humiliation of rescinding it may not speedily follow. An attention to this rule would preserve the judgment of many a young officer, unsullied by the stigma of weakness and indecision, which is invariably attached to it when *orders and counter-orders*

are tumultuously issued. This it is, that often leads to the adoption of a temporary, but fatal remedy—perseverance in error—*tenax propositi*—rather than revocation!

Equanimity is to be diligently cultivated, while anger and rage are to be most religiously avoided. Nor should punishment ever be inflicted immediately on the commission of a crime, or the detection of delinquency. Twenty-four hours of reflection on the part of the judge, and confinement on the part of the culprit, will have a salutary effect on the minds of both. Nor should an officer be openly rated before the men, for any error or negligence in his duty. A private remonstrance and advice will be infinitely more politic, and obviate the future tone of insolence which that officer would be apt to experience from the spectators of his humiliation. How often, alas! are these prudent maxims disregarded.

When chastisement is determined on, let it be solemnly and severely executed. Nothing is more certain, than that lenient punishment is the most refined cruelty. I have been in a ship where men were tied up without receiving more than half a dozen lashes, and the number seldom exceeded eighteen. Another Captain succeeded, who generally gave two dozen for the first offence, three for the second, and four for the third, which last rarely failed to reclaim the offender. I had the curiosity to examine the master at arms' book—the Newgate calendar of a man of war—and I found that the number of men flogged, and the number of stripes inflicted under the tender-hearted Captain, in

one year, just *quadrupled* those under the apparently cruel commander, in an equal space of time.

It is a great pity, however, that there is not a mode of punishment, by *solitary* confinement, similar to the *cachot*, or black-hole, among the French. The confinement in irons, on board an English man of war, is often more degrading than useful, from the circumstance of the prisoner being visited by his messmates, who amuse him, or even *increase* his allowance of grog, instead of leaving him to solitary and *sober* reflection. This should be looked into. Above all, the *frequency* of punishment should be avoided as much as possible. It familiarizes to, and effaces the disgrace, while it renders the victim callous to shame, as well as castigation.

There are certain offences, however, which ought to be placed beyond the pale of forgiveness at all times: such is, DRUNKENNESS AT SEA. This is the fruitful parent of a wicked progeny, which never fails to diffuse insubordination and sickness throughout a ship's company. Some hints on its prevention will be given under the fourth head.

A Captain, while he maintains a liberal intercourse with his officers, should never, either at his own table or theirs, permit or countenance the remotest approximation to bacchanalian festivity. A neglect of this rule is a source of infinite mischief, as might be demonstrated in a variety of ways. How often, in an unguarded moment, does the Captain put himself in the power of the officers, and the

officers in that of the men—then, farewell discipline!

He should never listen to detraction; for those who will secretly calumniate the character of a brother-officer, are utterly unworthy of confidence, or even credence; and in regard to tales affecting himself, he should be far above hearing, or wishing to hear them. By this dignified conduct, he will impress even the sycophant himself with respect, if not admiration. What turmoils has the want of this noble and elevated virtue engendered! The politician may smile, but I have seen cabals and intrigues, within the narrow limits of one of our wooden walls, that would not have disgraced the brain of a St. Cloud's or St. James's courtier!

The most rigid impartiality is not only commendable, but absolutely necessary, in the Captain of a well-regulated ship of war. The miserable system of *favouritism* ought to be proscribed. Let talent, virtue, and assiduity, alone be encouraged, and held out as an example for imitation.

These are not utopian plans, or attainments; they are *practicable,* though not always practised; they are within the reach of every individual, if he will only listen to the still voice of reason, and endeavour to subject his passions to its dominion.

Valeat quantum valere debet.

THE OFFICERS.

THE superior, or what are usually designated, the *wardroom* or *gunroom* officers of a ship, very often form an "overweening aristocracy," of no easy management or description. As they constitute a very important class of naval society, and take no inconsiderable share of tone from the character and disposition of their commander, so this consideration alone should prove a powerful stimulus to the *latter*, to set them, at all times, a *personal* pattern of good conduct; aware, as he ought to be, of the extensive range of its influence on the more remote and subordinate ramifications of the naval community.

I shall here, as under the former head, dwell first and principally on the sources of evil, and what we are to endeavour to avoid.

It is not difficult to conceive that DISUNION among the officers must be inimical to the discipline and health of the crew. It certainly is so; and, in nine cases out of ten, it originates in disputes at the mess-table. This arises, in a great measure, from that equality, or near approach to it, which pervades the class in question; and from the want of that *wholesome restraint*, which is imposed on the junior, (and consequently most turbulent) members, by the surveillance of age, rank, and authority, in *army* messes on shore.

Whether the first lieutenant has, or has not power, certain it is, that he rarely interferes on these occasions. Indeed, he is often one of the disputants himself; and therefore but ill calculated, in many respects, to soothe irritation, by a calm and dignified interposition.

The close habits of intimacy which must subsist between the officers of a ship, from the local confinement within so narrow a space, soon develope each other's mutual foibles, failings, eccentricities, and propensities of every kind; and, unless they possess a very ample share of good sense and forbearance, bickerings and altercations are soon called forth; especially where many, or any of them, are disposed to sacrifice freely at the shrine of Bacchus.

Here, indeed, lies the root of evil! For, although *actual inebriety* is now, *comparatively* speaking, but seldom seen among naval gentlemen, yet almost all our quarrels may still be clearly traced to a *post meridiem* origin.

There is something, too, in the monotony and the privations of a sea-life, that generates a peculiar irritability, or irascibility of disposition, which readily takes fire by a very slight collision; and for this there is often a copious supply of fuel, in the jealousies—not to say antipathies, arising out of opposite duties and contending prerogatives. Thus, the *executive* officer harbours envious feelings towards the ease and emoluments of the civilian; while the latter bears, with reluctance and impatience, the control, or occasional hauteur of the former.

In short, as I before remarked, it requires the assiduous cultivation of good sense and

good humour, on their part, and a strict impartial *regime* on the part of the commander, to preserve these discordant elements in any thing like homogeneous union.

But what is all this, it may be asked, to the discipline and health of the crew? A great deal; as is well known to those who have observed with a discriminating eye. There is in us all an innate propensity to imitate the vices rather than the virtues of our superiors; and as there is not a transaction which occurs, or scarcely a word spoken in the wardroom, that is not instantly retailed throughout the ship's company, by the servants, whose ears are ever open for the collection of scandal and immorality; so, the impression that is made on their minds by such examples, perpetually operates in loosening the bonds of respect and subordination, and in weakening the influence and command which the officers should ever possess over the minds, as well as persons of the crew. How often have I trembled at seeing an officer bring a man to the gangway for drunkenness, lest the prisoner should openly accuse his prosecutor of the same offence, committed with impunity the evening before!

The extravagance and irregularity of naval messes, too, are never-failing sources of discontent and disunion among the officers, not unfrequently leading to separation of the members—a circumstance highly injurious to discipline.

Economy, order, and temperance, are three cardinal virtues, which it is equally the duty and interest of each individual to study, as well

for his own comfort, as the general harmony and happiness of the ship:—indeed, they should be *enforced* by the first lieutenant, and supported by the united influence and countenance of the senior officers, as much as possible. It is not to be concealed, that a disposition to harshness, not to say tyranny, is too often evinced by naval officers; particularly among those who are recently emerged from the gloom of a cockpit, and have scarcely yet tasted the sweets of emancipation. Many of these conceive, that they cannot better proclaim their elevation, than by brow-beating and abusing the men, in a language and manner extremely reprehensible. Under a captain inclined to severity, these are dangerous engines; and under one who courts popularity, they will soon meet with those public checks and restraints, which must annihilate their authority, and expose them to the contempt of those whom they previously maltreated. In both cases, the harmony, health, and order of the crew are deranged.

The execrable habits of swearing are still prevalent in the navy; and while they disgrace the officer, and contaminate the principles of youth, they increase the callosity of the men towards every moral and religious impression, by propagating and sanctioning the detestable practice of blasphemy! Every captain should set an example, by totally abandoning it himself, prohibiting it in the officers, and punishing it in the men.

The acquisition of knowledge is not sufficiently attended to by naval officers. From their early entrance into this line of life, and the

subsequent disadvantages under which they must unavoidably labour, their education is too often wofully deficient, and, in general, is very confined.

Yet they have leisure enough for mental improvement, or even the most recondite studies. But alas! the taste for intellectual enjoyment is early depraved, or rather destroyed—

"Frozen is the genial current of the soul!"

If the officers of each mess were to curtail a portion of their wine expences, for the purchase of useful, or even amusing books, they would be wiser, healthier, and better members of society, than they are. The sphere of their ideas would be enlarged, and their conversation, in civil life on shore, would be entertaining, if not instructive; instead of being painful, as it now is, from its almost exclusive confinement to nautical subjects, conveyed in coarse or inelegant language.

The disposition to study among the superior, would soon be propagated among the inferior officers, and ultimately reach the men. Indeed, throughout the latter, knowledge is even now diffusing itself with rapidity; since there is not an article brought on board, at pay-days, by slopmen, that finds a readier sale than books. I have seen more than a hundred pounds laid out by a ship's company, in one day, on books! —Books, too, containing instruction as well as amusement. This may be a stimulus and warning to young officers, not to neglect the cultivation of their minds; an operation still very

much within the reach of their own exertions.

I know several instances of lieutenants and midshipmen making uncommon proficiency in all the liberal and useful species of literature, without the slightest neglect of their professional avocations; but, on the contrary, rendering themselves esteemed by their superiors, beloved by their equals, and respected by their inferiors.

THE SURGEON.

Although the maintenance of discipline, and the prevention of disease, depend almost entirely on the officers, yet an intelligent and well-informed surgeon is no trifling acquisition in a ship of war.

In the hour of battle, or visitation of an epidemic, many valuable lives are intrusted to his charge, and depend on his skill; and if, in the hey-day of health, he contemplates his situation as nearly a sinecure, and is regarded by others in the light of an idler, yet such emergencies—nay, the common accidents and derangements to which our frames are daily liable, will soon undeceive both parties; and they will teach the Surgeon this important lesson—the necessity of providing in peace against the exigencies of war.

The Surgeon.

Do the medical officers of the navy, *in general*, entertain a proper sense of the responsibility attached to their office, and conduct themselves in conformity to the impression which such might be supposed to make on a well-regulated mind?—I have little hesitation in answering with the negative.

The nature of the service, and of his situation, deprives, without doubt, the naval Surgeon of many sources of professional improvement—his own *indolence* too often completes the business, by destroying the propensity for observation, and the thirst for acquiring knowledge, which alone can compensate for these unavoidable disadvantages.

As there are but two ways of extending our medical information—experience and study; and as the range of the *former* must necessarily be limited in naval practice, one might naturally expect, that the *latter* would be cultivated with a proportionately greater assiduity. But this is not the case; and every navy Surgeon is furnished with numerous specious excuses for the almost entire neglect of it. On the list of grievances, the following stand most conspicuous: The expence of books—the destruction of them on board—the want of a proper place for study—the noise and bustle of a ship. Not one of them will bring forward the true excuse —*want of inclination.* All but the *first* of these alleged impediments may be easily overcome by even a moderate share of energy and perseverance, aided by the powerful force of habit. And the very surgeon who harps loudest on the *expence* of books, will go on shore in the *first*

boat, after the ship comes to anchor—repair to a tavern or brothel, and there squander away five times the sum that would supply him with intellectual gratification during the whole of the succeeding cruise!

But the evil does not stop here. Proceeding to sea, unfurnished with the means of profitably employing the leisure hours, his manners and habits gradually approximate to, and assimilate with, those of the most idle and dissipated of his brother-officers; till at length, trifling amusements, or sensual indulgences, overrun the fair field of mind with noxious weeds, that in the end render it an uncultivable waste!

Most surgeons of this description affect to despise all information derived from books, as consisting of delusive theories, or visionary speculations. But if we expect acute *practical* observations from a man who does not read, we shall, in general, be greatly disappointed; [a John Hunter is not every day met with] for seldom, indeed, shall we find a man much habituated to *thinking* himself, who feels no curiosity to explore the thoughts of others; and without the exercise of intellect, in some way or other, the practical deductions will be meagre enough.

I well know that the preceding reflections will not *universally* apply to naval Surgeons. Their qualifications, as well as situations, are greatly meliorated, and many of them are an honour to the profession; but the general tenor of my observations, I believe, is applicable.

The Surgeon.

It may not be useless to inquire into some of the causes that thus obstruct the acquisition and the desire of knowledge.—

A naval Surgeon, of even moderate abilities, and common circumspection, is the most independent officer in a ship. His immediate line of duty is quite unconnected with, and beyond the comprehension of, other officers. For, although it is said, that every one pretends to some knowledge of physic, yet it is a science so thinly spread over the understandings of non-professional gentlemen, that little inconvenience need be apprehended on that score.*

He is not only entirely out of the sphere of rivalship, [that spur to industry] but he is, generally speaking, far removed from the inspection of medical superiors, and the critical eye of equals. What can tend more powerfully to lull him into slothful security, and to relax his energy or exertions? Add to these, the monotonous routine of his duty, which sometimes, for months together, scarcely requires the effort of a thought—the despair of promotion, and the distant prospect of establishment in private practice on shore.

If these sources of apathy and indifference are not strenuously counteracted at the *very beginni g*, by literary pursuits, and the most critical and scrutinizing observation of whatever professional incidents come under his review, he will inevitably lose all relish and capacity for progressive

* I have seen surgeons, however, not a little embarrassed by *unexpected* questions from well-informed officers. Such dilemmas are useful, as they shew the danger of ignorance.

improvement, and settle in the dull ranks of insipid mediocrity—if not ignorance!

It is often amusing enough to contemplate the schemes and stratagems which some of the more *knowing ones* occasionally put in force, to veil the real state of affairs—to impose upon others, and to forward their own designs. Thus, a Surgeon of this class, who has taken the resolution to force his way to celebrity, without natural abilities, or the drudgery of tedious acquirements, directs his whole ingenuity to trifling minutiæ, and points of etiquette, that may attract the notice, and enhance the opinion of non-professional superiors, or even the less wary of the faculty. The label of a bottle will, with him, engross more attention and ceremony than the fracture of a leg; and the sick-berth will be kept in such apple-pie order, that the fastidious Captain Whiffle himself might dine in it, without any violence to his olfactory nerves!

With what conscious humiliation, and thorough sense of my own inferiority, have I been led through these splendid exhibition-rooms, [for the sick are rarely allowed to shew their faces there, being all packed off to the hospital, immediately on complaining] by a strutting Esculapian courtier, whose anatomical knowledge would have encountered a severe trial, in distinguishing the sciatic nerve from the sartorius muscle; and whose physiology would be utterly discomfited, in the attempt to explain the function of the liver or lungs! This may seem too severe; but really, I have often lost all patience, on seeing such ostentation and vanity about—"trifles, light as air," that might gain these sciolists the plaudits of

transitory visitors, or the *badly-discriminated* recommendations of admirals and captains, while, forgetful of the truism, "*Ars longa, vita brevis,*" they were transferring to *baubles* that time and application which should have been appropriated to the acquisition of useful knowledge.

I am an advocate for order, neatness, cleanliness, and regularity; but, whenever *exterior embellishments* usurp a degree of consideration of which they are not worthy, we may be assured that there is a weak point somewhere in concealment, to draw off our attention from which, these gewgaws are artfully displayed before us. Rarely, indeed, will we find rigid attention to unimportant *minutiæ,* amalgamate with talent and solid scientific attainment. That they are utterly incompatible with each other, I will not affirm- but the *combination* I have not yet had the good fortune to observe.

There is another class of naval Surgeons, who acquire great local renown by their skill in detecting fictitious complaints, and exposing skulkers. These are held up as paragons of excellence by some captains, who seem to forget that such eagle-eyed gentry *may* possibly err *sometimes* in their decisions; and then humanity shudders at the consequence! I have known instances of real illness brow-beaten, and forced to continue at duty, by unfeeling *fiats* of this kind, and I have been credibly informed of a surgeon, who refused to place a man on the sick-list, after having one of his toes jammed off by the chime of a cask!

It may here be remarked, that with medical men of this stamp, a *broomstick* ranks very high on their list of surgical instruments, which they

The Surgeon.

handle, too, with full as much adroitness as the amputating knife, and with equal pain and terror to their patients.

But enough of these. There may be—and I fear there *are*, certain bye-ways, or near cuts to promotion, occasionally; but there is only one general road [merit] to *honest* reputation, or advancement, and it leads under a gate of two arches —GENIUS and INDUSTRY, through one or other of which we must pass. He who takes the trouble of breaking down the partition between these arches, and of *uniting* them in one expanded portal, deserves a more triumphant entry into the fortress of fame and promotion, than he who *slinks* in at one of the sally-ports.

The following hints to a young naval Surgeon, may not be entirely beneath the notice of some old ones.—

First. In order to reap the greatest advantage from the field which he is entering on, he should set out on a fixed plan, both as to what he is to pursue and what avoid. He ought to dedicate a certain sum out of each quarterly bill, for the purchase of well-selected books; and that he may peruse them with advantage, he ought to minutely examine each complaint that occurs within the sphere of his observation, and then consult every author in his possession on that particular topic; noting in a common-place book, or on blank interleaves, how their sentiments agree with the actual phenomena, as presented at the bedside.

By these means he will not only have many resources at hand, in the treatment of diseases, but their symptoms become technically riveted, as it were, in his mind, by this critical comparison;

while a ready reference to sources of information is thus acquired, to meet accidental emergencies, when his mind would be perplexed and undecided.

Incalculable are the advantages resulting from such conduct. But, instead of this, young surgeons too often overlook slight complaints, or the first approaches of dangerous ones, till they are, all at once, startled by some alarming symptom; when, if no hospital is at hand, they prescribe in doubt and anxiety; or, if they consult a good book on the occasion, they learn, perhaps too late, that they have lost the opportunity of using some powerful means, which an early attention might have enabled them to employ with the happiest effect!

Secondly. He should systematize his studies; allotting certain days for medical, and others for general literature, making the former always preponderate.

But, as a mere BOOK-WORM, who crams his brain full of the ideas of others, without exercising his own intellectual faculties, in discriminating and judging for himself, is a most despicable chronicle of chaotic doctrines, he should early accustom himself to *think*, at least three times as much as he *reads;* and perhaps the great utility of the *latter* consists in furnishing materials for the exercise of the mind, until, by discipline, it becomes equal to the bold flights of original and independent exertion.

Thirdly. He should preserve a dignified deportment, in respect to temperance and morality. Any addiction to wine or spirits will ruin all his prospects, and lessen him in the

eyes of even his pot-companions; while a mild, but steady discountenance of vice and debauches, will often have more effect on his brother-officers than the frowns or lectures of the chaplain.

There is a perverseness in human nature, that prompts us to learn of any one rather than him who is regularly appointed to teach us; and on this account, the example of a sensible and well-informed Surgeon, in discouraging immorality, is stronger than that of the clergyman, who is too often illiberally suspected of hypocrisy, or of censuring vice merely *ex officio*.

Fourthly. Although mental relaxation be as necessary as corporeal rest, yet he should be exceedingly cautious how he gives way to the amusement derived from music—painting—poetry—chess—cards, &c. which are often resorted to by civilians on board a ship. Not that there is any thing injurious in themselves, but there is a danger of estranging him from professional pursuits, which will soon appear dull and insipid, when contrasted with these more fascinating entertainments. If his intellectual enjoyments, however, are well regulated, he will not often require these adventitious aids in passing his hours at sea.

Fifthly. His conduct to the men should ever be characterized by humanity and tenderness—always keeping in mind the *uncertainty* of his art, and the danger of suddenly deciding on what he might conceive to be imposition. It is better that we should be ten times duped by fictitious complaints, and thus protect a *skulker*, than once reject a real case of pain or disease,

however *appearances* might justify our scepticism at the moment.

It is true, that the obstinacy and perseverance of some men in feigning illnesses, especially of the chronic kind, are sufficient, at times, to exhaust the patience of the Surgeon. By cautious vigilance, in stealing upon these gentry at unguarded moments, we will generally be successful in detecting imposture, particularly with the judicious use of nauseous, but innocent medicines, and the application of blisters to certain parts that render idleness irksome.

Lastly. He should keep an accurate record of every circumstance touching the health of the ship's company, or in any manner connected with his profession, or the general science of natural philosophy.

Unfortunately, from an idea which very generally prevails, [whether true or false is of no consequence, since the effect is the same] that these records are destined to a state little differing from oblivion, the above injunction, the most necessary of all to be complied with, both for his own advantage and the good of society, is almost totally disregarded! Indeed, it is utterly impossible that the medical commissioner can examine, with any degree of minuteness, the piles of journals that flow in from every quarter of the globe, unless he were to make it his entire occupation.

Hence it is, that the most important facts, and ingenious observations, are unavoidably buried in the chaos of crude and superficial

communications, never more to emerge from obscurity!

> Full many a gem, of purest ray, serene,
> The dark, unfathom'd caves of *office* bear;
> Full many a flower is born to blush, unseen,
> And waste its sweets upon the desert air!

This, however, is only one part of the evil. What little grain lies mingled with the chaff, might possibly be eliminated; but the want of sufficient stimulus or emulation, actually choaks up every channel of information—or at least, of communication, so that what *might be* a vast emporium of the most valuable and curious materials, *is now* too often a heterogeneous mass of negligence or imposture!

Without being a projector, I am well satisfied, that the following simple and unexpensive plan would bring order out of confusion, and prove a powerful engine of improvement throughout the naval medical profession.

First. Let a properly qualified naval Surgeon [and there are many such] be selected, without any other salary than he would be entitled to, on service afloat, for the purpose of examining, minutely and critically, under the superintendance of the medical commissioner, the journals, reports, and communications of naval Surgeons.

Secondly. Let an arranged abstract be drawn up quarterly, for insertion in the periodical medical publications, in order that every interesting fact, observation, or occurrence,

might have as wide a circulation as possible among the surgeons themselves, as well as the public at large.

The good effects of this plan would soon be conspicuous. Emulation would be excited—genius and application brought to light—and ignorance, as well as indolence, detected, and *forced* to exertion and improvement.

From the moment that naval Surgeons were convinced that their journals and remarks were to undergo a critical revisal, and that impartial reports would be made upon them to the commissioner himself, a total revolution would take place in the manner of writing them. *Ready-made* remarks would be exploded—fictitious cases would be rarely ventured on, not only from the danger of detection by the revisor himself, [for a *good false case* is not so easy to frame as some people imagine] but, from the *publicity* that would then be given to transactions, enabling assistants or others, on the spot, to contradict unfounded assertions; all which impediments to DECEPTION have now no operative influence.

If it be true, (and I believe it is) that "a man's letter is a transcript of his mind," an accurate estimate would soon be formed of ability—an extensive source of curious and important information, would be established in the four quarters of the globe—and a powerful stimulus to the exertion of talent and industry, would be diffused among the most meritorious orders of the profession, without any expence to the nation!

But upon this, as upon every *new* proposition, however useful it might be, cold water will, of course, be thrown; and the convenient epithets of theoretical, visionary, impracticable, &c. will be liberally bestowed on it, especially by many surgeons, who might not conceive this plan as likely to contribute much to *their* renown; but I anticipate a more liberal consideration of the subject from the present worthy head of the naval medical department, whose urbanity and good sense are only equalled by his zeal for the diffusion of knowledge through the extensive class of officers over whom he presides. It happens, too, that the plan in question is not wholly without precedent: Dr. Trotter's Medicina Nautica, though on a confined scale, spread a very considerable share of energy through the naval medical world, for a time; the present is calculated to disseminate knowledge from a more abundant source, to a wider extent, and at a cheaper rate. It would literally be—"*ex tenebris dare lucem.*"

That some information is still to be gained from the observations of naval Surgeons, I may, without the charge of presumption, appeal to the present volume; because I exclude my own share of it from the question, and only instance the sections on "Endemic of Batavia," and "Endemic of the West Indies." If any unprejudiced reader denies that these are worthy of seeing the light, it will certainly be against the feasibility of my scheme, though by no means proof-positive of its inutility; for if my friends, as well as myself, be stupid, it does not follow

that all others are so likewise. But, without vanity, I reckon on a very different sentence, for them and myself; and I trust that the present publication, while it exhibits a specimen of the materials, will prove the best commentary on the design, and practicability of the plan recommended.

THE MEN.

——Whom Heaven decrees
To Neptune's wrath, stern tyrant of the seas!

It is not my intention to amuse myself or my readers with whimsical portraits of naval eccentricity, or sublime schemes of regeneration and perfectibility. For the *former*, I refer to Dr. Trotter's Medicina Nautica; for the *latter*, to the fulminating Essay of Lt. Hodgskin. My humble task is rather to recommend what I *know* to be useful, than what I *imagine* would be so—to improve on the *present*, rather than project entirely *new* systems. I believe the latter, *i. e.* progressive improvement, is more consonant with the nature of things; at all events, it is better adapted to a cramped and confined genius like mine, which is *not* yet

"Too fond of the right to pursue the expedient."

The seamen of a ship, like the peasantry and mechanics of a state, are the most important

class of all; being literally the sinews of our naval strength. For obvious reasons, it would be useless to address *to them* any rules for their own guidance. Like passive instruments, or rather, like children, they may be moulded to almost any shape, by dexterous management; but then, like brittle materials or froward youths, they may also be spoiled, or rendered useless, not to say dangerous to the state, by an injudicious mode of training. The whole scope and tendency, however, of the preceding admonitions to the officers, point ultimately to the discipline, the happiness, and, consequently, the HEALTH of the men. Where unanimity and order do not exist among the *former*, insubordination and sickness are sure to prevail among the *latter*.

I have remarked at the beginning, that the grand secret of preserving the health of a ship's crew consists in keeping their minds and bodies employed, without inducing chagrin or exhaustion. For this purpose, the code of interior regulations should be *mild and judicious*, in order that a rigid *performance* may be enforced; for this is the mainspring of the plan. How many complicated and laboured sheets of orders hang up, almost a *dead letter*, under the half-decks of ships! one half of which nobody thinks of consulting, (much less obeying) unless when disputes arise, to occasion a reference; whereas a few simple rules, *invariably adhered to*, would be infinitely more effectual.

When the men are convinced that nothing but an unforeseen exigency, or indispensible necessity, will cause a deviation from the routine

of duty prescribed, they know exactly what they have to do—their minds are accordingly made up to the performance of it, and they go through it with alacrity, in order that they may have the *intervals* for their own amusement or private occupations. But where order and punctuality are not rigidly enacted and followed up, the equilibrium in the division of labour becomes unhinged, and the greatest share of toil often falls on the best men. Never being certain of the exact periods of duty and relaxation, they become listless, lazy, dissatisfied, and careless about their personal cleanliness; the consequences of which need not be portrayed.

The great art, then—indeed, the laborious task of a first lieutenant, consists in appreciating the capacities of the men, and so apportioning their respective duties in every department, as to get them into a kind of mechanical train, when the future superintendancy will be easy and pleasant, and the health of the crew secured.

It is curious to observe how much the whole collective body of the navy, at the beginning of a war, resembles that of a single ship when newly commissioned, at any future period of that war, and manned, from various quarters, with people of heterogeneous dispositions and characters. They have both their periods of sickliness and indiscipline, at first—then they acquire order, energy, and a kind of manhood, or acme—but if the war be protracted beyond a certain time, or the crew of a ship are kept too long together, discipline relaxes, energy subsides—and, if the scene be not changed by

peace, in the one case, or the distribution of a ship's company in the other, they relapse again into a state which I do not wish particularly to describe.

This view of things is by no means fanciful; and perhaps it is not beneath the attention of the enlightened statesman. I think I could distinctly trace the causes of this phenomenon, and prove, almost to a demonstration, that the course above described results, sooner or later, according to circumstances, from the very nature of things, like the rise and fall of nations; and that, although it is possible to *retard* its progress, it cannot be completely arrested. There is nothing *stationary*—material or immaterial, mental or corporeal, in this sublunary scene!

But to return. I shall now glance at a few of those interior regulations which are more immediately connected with the subject of this essay—the preservation of health.

Watching. There is a peculiarity very generally remarked among sea-faring people, which, in my opinion, has never been satisfactorily accounted for, or the true reason assigned. It is, that appearance of premature old age, which so universally attaches to the class in question, that a person unacquainted with them would be liable to err, by several years, in forming a calculation of their ages from their exter- physiognomy.

It has been attributed to the sea-air—to the vicissitudes of climate which they experience—to their dissolute and intemperate lives—and to

the hardships and privations which they so often undergo.

All these will certainly operate, more or less, in producing the phenomenon; but I am convinced that the *principal* cause has been overlooked—and that is, their *abridged and broken sleep at night.*

This circumstance early attracted my notice; and for many years I have had an eye towards its investigation.

I have observed that those who do *not* keep watch at sea, whether among the officers or men, although they are of a more pallid complexion and unhealthy aspect, than either those of their own age, on shore or afloat, yet do not assume that early senescence, which deceives us when estimating the years of those whose rest is regularly broken by watch-duty, and who, of course, are much exposed to the influence of the night air. It was the observation of this fact that led me to remark, under the head of "SLEEP," page 472, that the order of Nature was never inverted with impunity; and that whatever we detracted from the natural period of our sleep, would be deducted, in the end, from the natural range of our existence.

It is notorious, that stage-coachmen, whose repose is broken or inverted, are very short-lived; and it is probable that this proceeds as much from the cause in question, as from the drink which they are constantly guzzling.

These considerations suggest, at once, the propriety of lessening, as much as possible, an evil that is unavoidable in a sea life.

The Seamen.

The practice of dividing the men into three watches, instead of two, is becoming general; but the advantages are very nearly counterbalanced by the frequency of turning out two watches, or watch and idlers, in all evolutions during the night. Young officers, for want of reflection—for their own ease, or for fear of accidents, often harrass the men so much in this way, that the latter would infinitely prefer the old system of watch and watch. It is the duty, therefore, of commanders, to obviate these inconveniences, as far as is practicable, by taking proper precautions in the evening, and by enjoining the officers of the watch to anticipate, by vigilance and timely manœuvres, what would otherwise occasion a sudden exertion and disturbance of repose throughout the ship's company. Another bad consequence of this, is, the abrupt exposure of so many bodies to the operation of the raw night air—perhaps of rain or snow, after they have been in a state of perspiration in the close, sultry apartments below, occasioning a long list of pneumonic complaints in the European, and hepatic or dysenteric, in the tropical seas.

The practice of permitting [not encouraging, as Lt. Hodgskin erroneously asserts] those of the watch, who are not immediately stationed by ropes, &c. to lie down on the cold, damp decks, at nights, in northern climates, is highly detrimental to health. In hot countries, indeed, it is very excusable during dry weather, because it is unattended with injurious consequences.

The Seamen.

Between the tropics, where permission is not given to the men to sleep in the open air, the watch on deck should always be compelled to bring their hammocks up, for the purpose of affording more space and ventilation to those below; but I am fully satisfied, that an obstinate adherence to the European custom, of forcing every one to sleep in his berth, is productive of ten times more injury to the health of seamen, in the East Indies, at least, than if they were all permitted to sleep on the booms, and other cool and open parts of the ship.

I do not speak from theory or prejudice, but actual observation and experience, as well as extensive inquiries; and I believe that many of the most enlightened officers, who have been long in the East Indies, could corroborate the truth of this position. I shall only instance the late Admiral Rainier, who almost always slept in the open air, and Sir Chr. Cole, a very intelligent officer, who very generally pursued a similar practice. I could particularize numbers of others, including myself, who followed this plan, without ever experiencing the least ill effects.

Wet weather, heavy dews, or insalubrious exhalations from contiguous marshes or shores, render seclusion necessary, of course, in hot climates; but these are not of very frequent occurrence, and by no means militate against the truth of the general principle.

In sultry latitudes, the greatest attention should ever be paid, in keeping the windsails constantly trimmed to the breeze, so that as

much pure air as possible may be circulated below. This is a measure almost invariably neglected, however strict the *orders* may be to the contrary. The lieutenant leaves them to be executed by the midshipman, the midshipman transfers them to the quarter-master, and the quarter-master never troubles his head about the matter.

Messing. The habit of intoxication which prevails among seamen, is the cause of more sickness and insubordination, (leaving danger out of the question) than all the other vices and irregularities put together. Indeed, it may be considered as the parent of almost all; since it constantly leads, directly, or indirectly, towards them. Nor has any effectual stop been ever put to this deplorable propensity, by the severest punishments. These last make it less apparent, it is true, by rendering the men more cautious, but it is rather concealed than extinguished, in the best-regulated ships.

The reason is, that among the crew of a vessel of war, there will always be a considerable number who are willing to sell, and still more who are anxious to purchase liquor, however exorbitant may be the price; and as there is—"honour among thieves," so the parties never will discover on each other, even if they were flogged till they hung senseless at the gangway! I scarcely remember a single instance of threats, promises, or punishments, inducing a seaman to criminate his shipmate who might have sold him this poison. They will often acknowledge that they bought the grog or wine, and got drunk

thereon, but it is nearly hopeless to think of detecting the *vending* culprit. They know, in fact, that confessions of this kind would soon knock up the *trade* completely; and therefore they dare not, without being branded among themselves, divulge the secret.

It is in this way, that much prize-money ruins a ship's company. The mischief to health, and discipline at sea, by these transfers, is of infinitely greater consequence than all the debauches committed on shore, when the ship is in port. It is my opinion, that after the seamen have laid in a proper supply of clothing and useful articles, with their pay or prize-money, too many facilities can scarcely be afforded them of squandering away the remainder, in the most expeditious manner possible.

This may seem a curious doctrine to gentlemen of the *perfectibility school*, but it is drawn from practical observation, and an attentive consideration of all the pro's and con's.

While there is money in a ship there will be drunkenness, in spite of all the plans that have hitherto been devised to prevent it;—nay, where there is no money, one-half of the mess will frequently go without their allowance to-day, in order to have double to-morrow; and this regular course of alternate ebriety and privation will be kept up for weeks together!—all this, too, without their being detected; often, indeed, without being even suspected by their officers. The *dose* is generally taken just before turning-in to bed, so that a good sleep may enable them to *pass muster* tolerably well, when the watch is called. It sometimes happens, to

be sure, that the dose is too strong, or the head too weak, to allow of turning-out, at the unwelcome note of the boatswain's mate: then, indeed, the miserable culprit *pays* over again, next morning, for his potation, and with feelings more easily conceived than described! But this rarely deters from a repetition of the offence—too often, it hardens the wretch in his mad and destructive practice.—"Quem Deus vult perdere, prius dementat!"

I know of but one plan which bids fair to check this dreadful evil effectually. It is, to distribute the quarter-masters, boatswain's mates, and all that class of petty officers, and other individuals who are rated above able seamen, into the different messes, so that *one* good and responsible man, at least, may be found in each. He should be called the *mess-master*, and the grog or wine every day received by him from the purser's steward, and impartially meted out to his messmates, and drank of course before his face. This office he is to perform, at the risk of losing his rating for negligence or connivance, which rating ought to be given to him who detects such mal-practices, provided he be adequate to the duty.

No man in the ship could start even the shadow of an objection to this plan, excepting those who wished to elude its salutary effects. It is founded in justice, and it would prove more powerful than any fear of corporeal punishment, in preventing that *latent inebricty*, so destructive to the morals and health of a crew; because it places the check, as a trust of confidence, in the hands of the *best*, instead of leav-

ing it at the mercy of the very *worst* men in a ship!

If, after this, an instance of intoxication should occur, and could not be traced, then the whole of that man's mess ought to be punished, by drinking their proportions at the grog-tub, for a month, at least; and this penalty never to be remitted, or otherwise commuted, but made a standing rule. This *dernier resort* of drinking at the grog-tub, is one of the greatest inflictions on seamen, since the half-hour which follows the issue of their favourite beverage is, to them, more precious than all the rest of the day; as any one may convince himself of, by observing the mirth and glee which reign triumphant, from stem to stern, during this happy period.

But, instead of the distribution which I have recommended, we now often find the most orderly men endeavour to get together in a mess, leaving the reprobates to congregate by themselves, and commit all kinds of wickedness, without the least control.

It is curious to think, how rigid and ceremonious a captain or lieutenant sometimes will be, about the scrubbing of a hammock, or the scraping of a deck, while the important regulation of a seaman's mess, in respect to drink, never occupies a moment of their consideration!

The plan proposed would likewise obviate the *bad effects* arising from the indulgence of *liberty-liquor*—an indulgence which I do not conceive to be very criminal in itself, [under

proper limitation] considering the privations which seamen undergo at sea, and on foreign stations, and that nothing but table-beer is served out to them in port.

A ship arrives at Spithead, after a seven years' station in the East Indies, and a seaman requests leave to purchase *a pint of porter*, to drink when his work is finished: a compliance, on the part of the commanding officer, is branded by Lt. Hodgskin as one of the horrid vices and abuses of the navy—nay, it is actually turned into a calumnious insinuation, or rather, open accusation, *that the officers encourage drunkenness among the men!—proh pudor!*

As for the illicit intercourse which is *tolerated* between honest Jack and his frail Cyprian, on return to port, it is quite shocking to the delicate morality of Lt. Hodgskin; but, till his *naval utopia* is fairly established, wise men—aye, and religious men too, are persuaded that there are such things as *necessary evils;* and that to purge our sea-port towns, and ships of war in harbour, from all "ungodliness and lusts of the flesh or of the *spirit*," would probably be a more difficult task, than that of cleansing the Augean stable, without the stream of the Alpheus.

But to return. The food of seamen is now so good, in general, that few objections can be made, or alterations proposed, on that head. Soft bread, however, might be easily substituted for biscuit, as in the French navy, and among the officers of our own ships. There is nothing, absolutely nothing but the want of will,

to prevent the adoption of this very excellent plan from our enemies—

"Fas est, et ab hoste doceri."

That this would be indeed a luxury, those who have been under the necessity of living on worm-eaten and flinty biscuit, can amply testify! I am convinced that it would save government a vast expence, [putting health out of the question] since flour could be infinitely more easily stowed, and better preserved than biscuit.

The increasing propensity towards tea-drinking among seamen, has proved a great source of alarm to certain physicians of a *nervous temperament.* As far as my observations extend, there is not the slightest ground for anxiety on this head; on the contrary, I have constantly remarked, that as the habit of drinking tea advanced, that of drinking grog declined. Indeed, I scarcely recollect an instance of a sailor, who was fond of tea, being addicted to ebriety. As for the bad effects of tea on the *great sympathetic nerve* of a seaman, we may make our minds easy on that score. The Piedmontaise and Psyche are memorable proofs, that the tea of the *East* had not unstrung the nerves of our tars; nor did our naval reverses in the *West* arise from the refreshing beverage of an innocent plant!*

* As there are few classes of society more in the habit of using *mercury* than sailors, it is wonderful that Dr. Trotter

The Seamen.

In all well-regulated ships, certain days and hours should be set apart for washing clothes, scrubbing hammocks, &c. which should be *invariably* observed, unless some very particular exigency interfered. Once a week, the captain, or first lieutenant, should examine, with a scrutinizing eye, the chest and bag of every sailor. Nothing proves a greater check on uncleanness than this; for a seaman is very much ashamed to see his dirty clothes turned out before an officer, after he had time and opportunity for washing them. This, however, is much neglected.

The captain should each day visit every deck in the ship, as well as the sick-berth; afterwards, the convalescents, and all with slight complaints, should pass under his review, either beneath the half-deck, or, in fine weather, on the poop. This has an excellent effect; but, like the preceding, it is getting much out of use.

During the day, as well as during the night, the seaman, when it is his watch below, ought not to be disturbed, unless the duty imperiously demands it. He should have a few hours, every day, entirely to himself, whether he employs them in mending his clothes, or in any kind

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did not detail its tragical effects among the "*fifty thousand* cases of venereal" * that he attended. But his harangues against mercury are calculated for the meridian of hypochondriacism, and are really beneath the serious notice of any medical man of common sense and observation.

* Nervous Temperament.

of amusement. To see that this is attended to, is not beneath the dignity of the captain himself, who should not permit the men under his charge to be incessantly occupied by the first lieutenant, in frivolous decorations and polishings, by way of—"keeping the devil out of their minds," as I have heard many of these over-zealous, but injudicious officers, term this very improper practice. If it be urged in excuse, that these extra duties are lenient penalties for petty delinquencies, I answer, that when a first lieutenant is once smitten with the *pulchro-mania*, or rage for beautifying [polishing shot, for instance, to carry off the legs of our enemies without splinters] he will never be at a loss for delinquents!

The old proverb is here strictly and literally verified—that "all work and no play makes Jack a dull boy." His hours of relaxation should, therefore, be "*tabooed*," and never molested, unless from the most urgent necessity. Upon such occasions, I have never observed him lazy or backward.

The seamen should have a longer time for their meals than they now have, particularly in a hot climate; and are never, if possible, to be disturbed at these periods. Many a wanton and unfeeling infringement on these rules have I witnessed!

Washing of Decks. This exploded custom is now so interdicted by medical anathemas, that I shall be set down as an *ignoramus*, if I do not join in the general cry. But I am one of those obstinate sceptics, who do not believe a *single*

sentence of all the tragical tales that are told of this lethiferous practice; and for this simple, but probably arrogant reason, that I have long made it a rule to give credence, in plain matters of fact, to the evidence of my own senses, rather than to the assertions of others; and to this rule I mean to adhere, till I am convinced that my own eyes and understanding are no longer trustworthy.

In a ship of the line, on the home station, I have been in gales of wind, during the depth of winter, when the decks were flooded with water, for weeks together, without the possibility of drying them. I have listened, night after night, to these torrents, rushing and roaring from one side of the lower deck to the other, as the ship rolled, while five or six hundred men, in hammocks, were suspended nightly over this moving current, in the most advantageous manner possible for feeling its influence. And what was the consequence? why, that there was not a man on the sick list!

But the scene changes—the gales subside—the wind veers round to the eastward—we regain our station off the coast of France, where the sea is smooth, the air keen, and the decks perfectly dry. And what is the result—why, that half the ship's company is laid up with pneumonia!

Instances of the *former* kind, I have witnessed beyond the Arctic circle—on the coast of Jutland—in the southern ocean off the Cape of Good Hope—in the Chinese seas—on the banks of Newfoundland; all without any bad effects from this dreaded *humidity*. And must I now

tamely disbelieve what my eyes have seen, in every sea from Iceland to Borneo, because some naval surgeons were puzzled to account for the sickliness of ships, at the beginning of a war, when contagion—drunkenness—indiscipline—and every form and shape of the depressing passions, were operating in full force, and predisposing to, or exciting, all kinds of disease? But no; all was occasioned by the *difference* between deck-washing and deck-scraping!—

> Oh, that such difference should be,
> 'Twixt Tweedledum and Tweedledee!

Holy-stones and sand are now, however, making such a *noise* in the navy, that the voice of common sense will not be heard for some years to come; and we must comfort ourselves with the reflection that——

> Naturam expellas furca, tamen usque recurrit.

What will be thought of the Goths and Vandals at the Royal Infirmary of Edinburgh, and the Royal Hospital at Haslar, who still continue to wash the decks [floors] of their wards, even where the sick cannot leave them while drying, and without any bad consequences?

Nor do I condemn the system of dry holy-stoning the decks, in northern climates, between the autumnal and vernal equinoxes; but let us not be stifled with dust and sand on board a ship, in the dog-days, through a groundless apprehension, that sprinkling the decks with water will ruin the health of the crew.

The Surgeon.

Between the tropics, washing of decks is not merely harmless, but highly salutary. It cools the ship—kills myriads of ants, cock-roaches, and other insects, and procures a greater degree of attention to ventilation than the opposite system.

But the grand object is, to diffuse contentment through the minds of a ship's company. While duty is performing, let it be carried on with spirit; but, when that is over, amusements of every kind should be promoted by the officers, that the *tedium vitæ* of a seaman's life may be, as much as possible, dissipated.

I have already hinted, that a taste for reading was fast spreading through the inferior classes of naval society. This should be encouraged by the captain. There is little danger of their studying any books which can contaminate their principles—they have neither capacity nor relish for such; and the perusal of entertaining publications (which they chiefly purchase) will invariably contribute to their health and happiness.

Music, which amuses the mind and exercises the body, is a desideratum in every ship, and dancing should be countenanced and promoted, by setting apart particular hours for that purpose.

The foregoing remarks on Naval Hygiene will apply generally throughout the service; and it is hardly necessary to notice such modifications as a long voyage or tropical station might more particularly demand.

The Seamen.

While contemplating the progressive improvements in navigation, from Columbus to Cook, we usually give credit to the latter, for having brought Naval Hygiene to the *ultimatum* of perfection, during his celebrated circumnavigation in the Resolution. But Sir John Pringle, in his elaborate address to the Royal Society on that occasion, has viewed (as many others have done) the preservation of health in the Resolution's crew through a host of prejudices. He little knew the comparatively greater ease, with which a small ship's company is kept free from sickness, than is that of a large one; nor how much depends on the chapter of accidents in both cases!

The ship that starts *unprepared* from England, and touches at no port, till she drops anchor in the Ganges [upwards of 14,000 miles] without burying any of her crew, performs as great a wonder, perhaps, as the Resolution while encircling the globe.*

In a small ship, the men are more immediately under the eyes of the officers, than in a large one; and consequently there is less of sculking and idleness, the parents of disease.

* Captain Page, a very intelligent officer, and able navigator, conducted a frigate to India at the beginning of the war, the crew of which had just been collected together from jails, hospitals, impress rendezvous, &c. forming a heterogeneous mass of the worst materials, and without a single day's preparation for a foreign voyage. Without touching any where, except a few hours at Madeira, the passage was completed without the loss of a man, and with scarcely a symptom of scurvy.

The Seamen.

On a voyage of discovery, the prospect of returning home is certain, and daily drawing nearer; on a foreign station it is uncertain—not seldom discouraging. Variety is soon succeeded by satiety, and HOPE is too often turned into despair!

This view of the subject suggests the utility of *frequent change of station* throughout the navy. If the government knew the wonderful influence which they possess over the minds and bodies of British seamen and officers, by this easy expedient, they would doubtless avail themselves of a powerful engine, which is now actually moving in a wrong direction, and operating against themselves.

There is something in a seafaring life, that generates a boundless thirst for variety, and impatience of local confinement. This is evinced through every class, from the admiral to the swab-wringer; and the decline of life, with all its broad circle of habitual and domestic attachments, is hardly sufficient to eradicate the incessant desire of change.

If this propensity were turned to advantage, we would rarely hear of mutiny or desertion among the men, or increasing demands for pay or privileges among the officers; all which are hatched in the feverish restlessness and discontent occasioned by the dull uniformity of protracted stations.

Water is an essential article in the preservation of health on a long voyage; and the plan of *allowancing* should be avoided, if possible. It is better to let the people drink as much as they please at the scuttle-butt, and not to take

any from thence, except for cooking, or the use of the sick.

As for the *purely medical* part of Naval Hygiene, on a protracted voyage, it may be compressed into a nutshell. The whole farrago of antiscorbutic nostrums is now reduced to a few cases of lemon-juice; and the long catalogue of fever exorcisms [from the *explosive devils* that used to render the between-decks of our ships so many miniature representations of Tartarus, down to the more elegant antiloimic farce of *oxymuriatic* incantation] is now superseded by the simple application of three elements, that are always at hand:—water—air—fire. And thus, what was decided in the *senate* to be deserving of a national reward, is known, in the *cockpit*, to be the veriest phantom of imagination!

Sic transit gloria mundi!

On approaching and entering a hot climate, however, the propriety of administering opening medicines to the crew, at short intervals, for some weeks, or even months, is by no means questionable; more particularly on a West-India station, where the transition of climate is so suddenly experienced. This is a measure quite practicable, as a ship's company are rarely unwilling to adopt any prophylactic that the surgeon may propose. Common sea-water, sharpened with some salts and senna, is as good and convenient a laxative as can be employed. During a temporary exposure, however, to an

atmosphere strongly impregnated with dangerous miasmata, small doses of mercury would probably be more efficacious in resisting their effects.—Vide "Batavian Endemic."

But the principal object is, to keep the crew *cool*, by not subjecting them to the influence of the sun, during the day, and by the most rigid attention to windsails by night.

Bathing, a luxury to which sailors are much attached, should be countenanced, though *swimming* is to be proscribed, not merely on account of the danger from sharks, which are numerous in most tropical seas, but because it is a species of exercise infinitely too exhausting, and consequently subversive of the object in view, viz. to moderate perspiration, and inure us to vicissitudes of temperature. A large studding-sail alongside should be the boundary of their aquatic diversions in this way.

Although I should be far from wishing to abridge any of the rational indulgences that can be safely extended to our seamen, yet, the the liberty of going ashore, in hot climates, is rarely unaccompanied by the worst consequences to their health; since there is not one in fifty of them, who can muster self-control over the unhappy propensity to inebriety on such occasions.

There are few of the West-India islands, where new rum is not so easily procurable by the seamen, as to make them highly dangerous to such thoughtless visitors; and the same may be said of the different coasts and presidencies of the East, where arrac, of the worst quality,

is in abundance. Independently of this, Bombay, Trincomallee, Madras, and Diamond Harbour, have each their local sources of insalubrity, as explained in different parts of this essay, rendering them peculiarly destructive to sailors on shore.

St. Helena—Prince of Wales's Island—Malacca—Macao—and a few other inter-tropical parts of India, are less dangerous to liberty-men, in every other respect than that of the cheapness of inebriating materials, which, indeed, are but too plentiful all over the Eastern world.

Next to restraining the intercourse of seamen with the shore, particularly during the first year of a tropical station, is the necessity of preventing the introduction of these poisonous potations on board, by the swarms of natives, who come afloat for these and other purposes. This is a measure of the utmost importance, but is, by no means, so strictly attended to, as the magnitude of the evil, it is calculated to obviate, demands. An increased vigilance on the part of the officers and master at arms, together with the *mess regulations* I have hinted at, would go far to check this contraband and ruinous traffic.

But the great, the paramount evil, of *protracting* the stations of ships, in hot climates, beyond *two years*, will ever frustrate our utmost care, and baffle our wisest precautions, while it is pursued!

Were this limitation to *two years* assured, our seamen would go abroad with cheerfulness,

and serve the appointed time with alacrity and vigour; while HOPE, that

> Angel of Life, whose glittering wings explore
> Earth's loneliest bounds, and Ocean's wildest shore!

would never cease to diffuse the balm of contentment through their minds, and thus effectually resist the approach of chagrin and despair, those dire destroyers of European health in tropical climates.

Si sapis quæris igitur salutem,
En tibi portus patefit salutis,
Hunc tene salvus, fruere et salute
Vive valeque!

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